

Sixteenth Biennial Report
of the
Department of Agriculture
of the
State of Florida

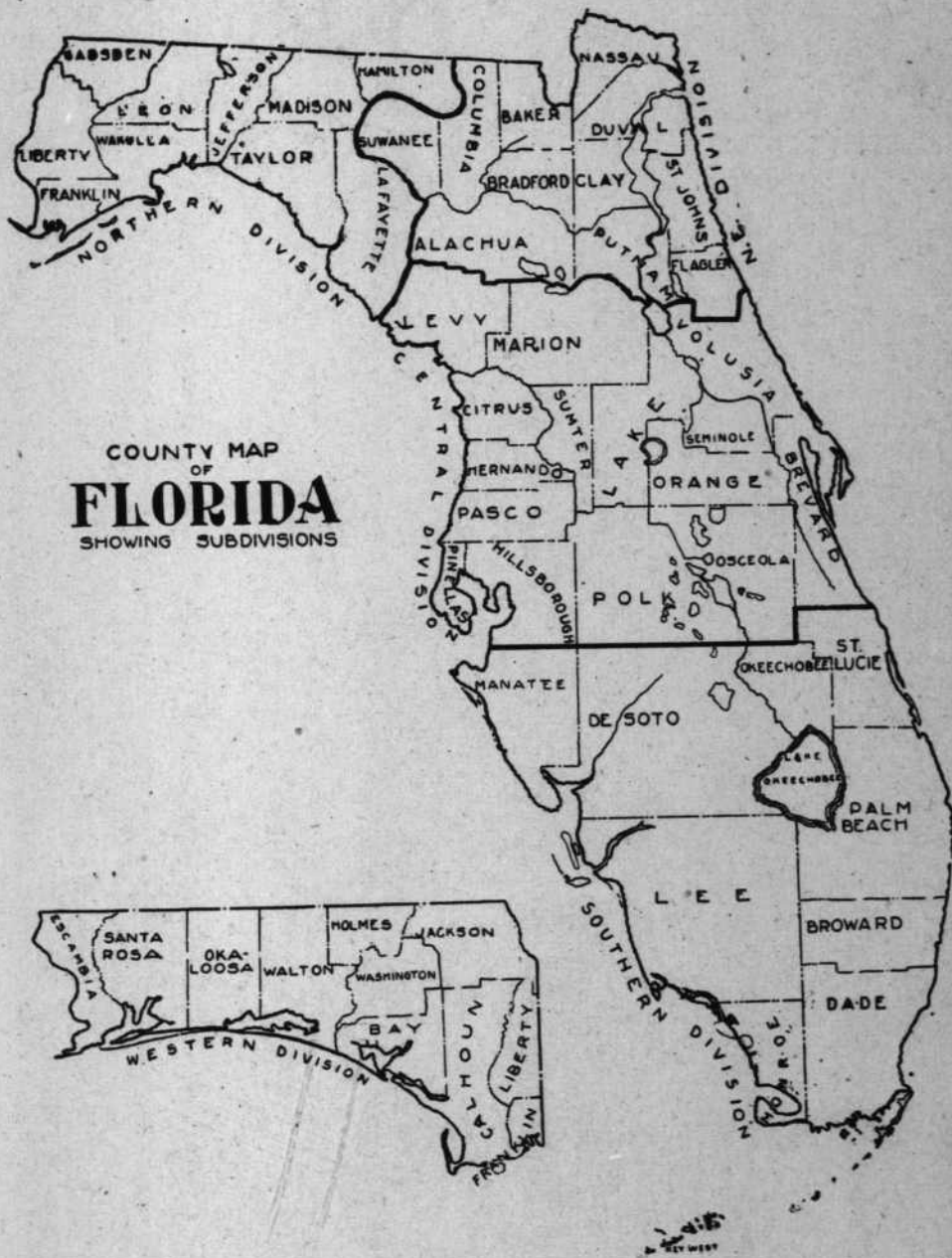
Division of Agriculture and Immigration
Hand Book of Farming and Allied Industries
Part 1

FOR THE YEARS
1919-20

W. A. McRAE
Commissioner of Agriculture
Tallahassee, Florida

 T. J. APPLEYARD, PRINTER, TALLAHASSEE, FLORIDA

STATE LIBRARY OF FLORIDA



CONTENTS

LETTER OF TRANSMITTAL

PREFACE

THE NEW AGRICULTURE

*By W. A. McRAE,
Commissioner of Agriculture.*

WORK OF THE LIVESTOCK SANITARY BOARD

*By W. A. McRAE,
Commissioner of Agriculture.*

COMMERCIAL AGRICULTURE

*By T. J. BROOKS,
Chief Clerk, Department of Agriculture.*

CO-OPERATIVE MARKETING IN FLORIDA

*By J. H. ROSS,
President Florida Citrus Exchange.*

MARKETING PROBLEMS

*By L. M. RHODES,
State Market Commissioner.*

CO-OPERATIVE MARKETING OF PECANS

*By W. P. BULLARD,
President National Pecan Exchange.*

SOILS AND FERTILIZERS

*By T. J. BROOKS,
Chief Clerk, Department of Agriculture.*

THE EVERGLADES

*By F. C. ELLIOT,
Chief Drainage Engineer.*

CABBAGE-GROWING IN SOUTH FLORIDA

By J. PETERSON, PH. D.

ROSELLE, THE FLORIDA CRANBERRY

*By SARAH W. PARTRIDGE,
In Florida Grower.*

BY-PRODUCTS OF FLORIDA FRUITS, OTHER THAN CITRUS

*By SARAH W. PARTRIDGE,
State Home Demonstration Agent.*

GROWING GRAPES IN FLORIDA

By F. J. ZIMMERMAN.

HOW TO SAVE SWEET POTATOES

*By C. E. BREHM,
Tennessee Division of Extension.*

SWEET POTATO GRADES

*By M. C. GAY,
Secretary Farm Bureau of Atlanta.*

SUNFLOWERS

U. S. DEPARTMENT OF AGRICULTURE.

MANUFACTURE OF SUGAR CANE SO AS TO PREVENT
CRYSTALLIZATION AND FERMENTATION

*By J. K. DALE AND C. S. HUDSON,
Bureau of Chemistry, Washington, D. C.*

MANUFACTURE OF SUGAR CANE SYRUP ON SMALL SCALE
BUREAU OF CHEMISTRY, WASHINGTON, D. C.

PROCEEDINGS OF THIRD ANNUAL CONVENTION FLORIDA
DAIRY ASSOCIATION

CORN SUBSTITUTES FOR FEEDING HOGS
FLORIDA FARMER AND STOCKMAN.

WHAT FLORIDA HAS DONE IN ROADBUILDING
FLORIDA GROWER.

BIBLIOGRAPHY OF FLORIDA LITERATURE

*By MOSES FOLSOM,
Secretary State Market Bureau.*

CLIMATOLOGICAL DATA, FLORIDA SECTION

*By A. J. MITCHELL,
U. S. Weather Bureau—1919.*

AGRICULTURAL AND POPULATION STATISTICS
U. S. BUREAU OF THE CENSUS.

LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE, STATE OF FLORIDA,
COMMISSIONER'S OFFICE.

To His Excellency,
Hon. Cary A. Hardee,
Governor of Florida:

Sir:

Herewith is transmitted to you Part I of the Biennial Report of the Department of Agriculture for the years 1919-20: Consisting of popular farm information, written and compiled as a ready reference volume for Florida farmers, schools, libraries and homes.

Other parts of this report, consisting of agricultural and manufacturing statistics, will follow in Parts II and III.

Respectfully submitted,

W. A. McRAE,
Commissioner of Agriculture.

PREFACE

We believe that Agricultural Reports should be as readable as other books, that they should be full of new, concise, instructive, interesting reading matter, so worth while as to be treasured in the home, the school, and the library for years to come.

The study of soils and crops is a profound science and the handling of the same to the best advantage is a high art. Necessarily, each locality has its peculiar problems to solve, and as methods of farming change new implements must be used and new requirements met. The accumulated experience of years adds greatly to the power of the farmer to match conditions. The material herewith presented is garnered from the fields of experience and from scientific investigation. It is hoped that it will be of service to the farmers of Florida.

In the main two phases of agricultural activities are covered in the material of this volume: (1) The Business Side of Farming; (2) Practical Helps in Practical Farming and Husbandry. The fact that co-operation among farmers is stressed does not imply that the purely productive side of agriculture is not of first consideration, but as commercial agriculture has not had its due consideration it is featured herein.

The Department is always open for suggestions and contributions on all lines and welcomes the same from any source.

To avoid delay in the issuance of this volume the statistical report will be published separately in Part II.

The Department of Agriculture includes in the duties of the Commissioner the following divisions:

1. Division of Agriculture and Immigration.
2. The Prison Division.
3. The Pure Food and Drugs, Stock Feed and Fertilizer Division.
4. The Land Division.
5. The Field Note Division.
6. The Shell Fish Commission.
7. The State Bureau of Markets.
8. The Division of Oil Inspection.

The Commissioner of Agriculture is also a member of the following boards: The Board of Commissioners of State Institutions; the Board of Pardons; the Trustees of the Internal Improvement Fund; the Board of Commissioners of Everglades Drainage; and he is also President of the State Live Stock Sanitary Board.

**DIVISION
OF
AGRICULTURE**

THE NEW AGRICULTURE

By W. A. McRAE,

Commissioner of Agriculture

We can speak with prophetic vision of the New Agriculture, as foretastes of wonders yet to be surround us on every hand, and streaks of the dawn are already athwart the mountain top, heralds of the coming day.

The old agriculture supplied the community, the new supplies the world.

The old agriculture was by individual effort unaided by science; the new is by collective effort with science as its handmaid.

The old agriculture stopped with production, the new uses the agencies of the social compact and carries operations into commerce to the consumer.

The successful participant in the new agriculture will be he who can measure up to the strenuous demands of the latest civilization, which is scintillating with energy and ablaze with enlightenment.

The new agriculture is new in method, power, promise and fulfillment.

The former has fed humanity all down the ages, but it required a very large per cent of the population to engage in agricultural pursuits in order to furnish the wherewithal of human existence. But when modern manufacturing, mining and transportation made such heavy drafts on the rural population for workers a new task confronted the farmer. He must be more efficient and produce more per hand or the world's progress must halt. Workers cannot be spared from the farm unless fewer can produce equal results.

Has the farmer met this problem and solved it?

Yes.

How has he done it?

By increasing the efficiency of the man power on the farm. Every time a comrade of the soil answered the call of another vocation he that was left reached for more power, stored without stint in nature's infinite fullness. Invading the realm of limitless energy he appropriated elements from earth, sea, and sky and fashioned "beasts of burden" incapable of pain or fatigue, harnessed plows by the "gang" to his tractor, mounted the willing steed,

cracked the whip of authority and lo the acres turn as if it were a pleasure, and man obeys the command to "subdue the earth." As others left the farm a new plow was added to the "gang" and a new lung to the steed.

The population of the United States increased from 1870 to 1910, 140%.

During the same period the number of farmers increased 113%.

The increase of horses and cattle for this period was 140% each.

Corn production increased 206%, wheat 213%, oats 246%, cotton 358%.

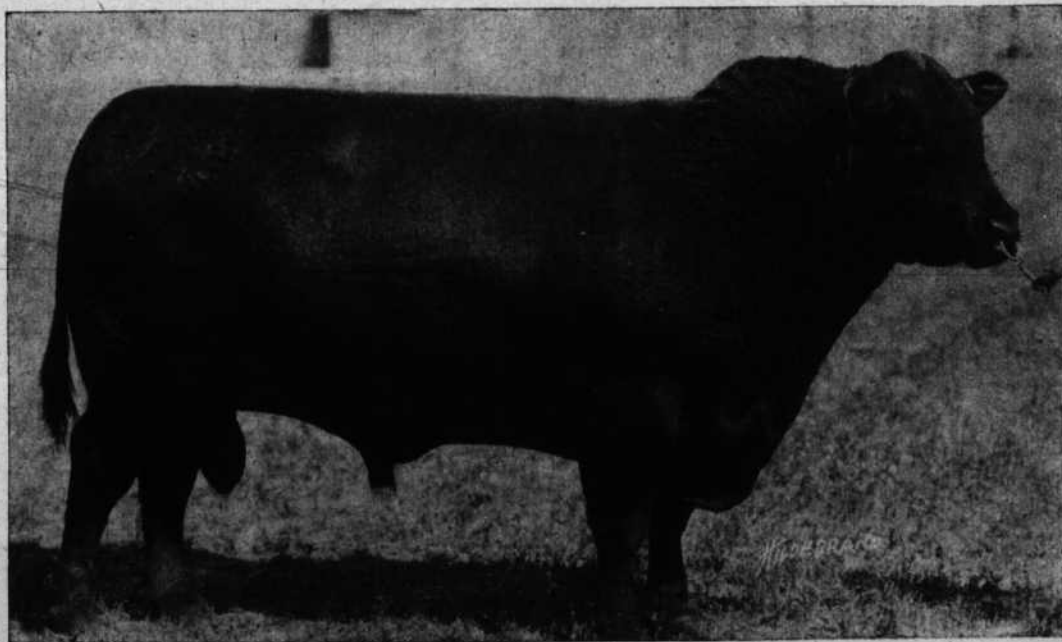
I would also call your attention to the fact that the best lands lost most heavily in population. The use of machinery made it unnecessary for so many to remain on the farm.

The three largest grain states lost in farm population 36,000 from 1900 to 1910, yet increased grain production 21%.

Another thing I want to mention is that it is no discredit to us that Europe or China can show greater yields per acre than we do. We should congratulate ourselves that we do not farm "by hand" as do those who show such phenomenal yields per acre. Intensive farming has its undesirable features. Wherever it is practiced extensively there is an ignorant peasantry. It means a life of ceaseless drudgery. Field crops cannot be grown by gardening methods without sacrificing the worker to standards set by competition with machines. When it is pointed out that we fall below some country in yield per acre always set beside that fact another one that more than offsets it: *The amount produced per hand is greater in the United States of America than in any other country in the world.*

Intensive farming on the European standard means the extensive waste of the most precious thing in the world, the one thing worth while, *the Life Power of Human Beings.*

There has been a great deal of "mining" of farms in this country, which marked us a wasteful people, squandering our heritage. From 1870 to 1895 this went on to a very marked degree. But for the last twenty-five years the average yield per acre has been on the increase.



Estoi E. 2nd-206009, Anthony Farms.



Notwithstanding the drain on the country population those remaining on the farms have met the demands.

The number of horses per 1,000 inhabitants in 1900	178
The number of horses per 1,000 inhabitants in 1919	203
The number of cattle per 1,000 inhabitants in 1900	577
The number of cattle per 1,000 inhabitants in 1919	648
The number of hogs per 1,000 inhabitants in 1900	488
The number of hogs per 1,000 inhabitants in 1919	705
The average production per year for each inhabitant of 1900 census—five years ending 1899	44 Bu.
The average production per year for each inhabitant of 1920 census—five years ending 1919	48 Bu.

However, there is a point beyond which we cannot go in the exodus from the farm to the city without paying the penalty that was paid by Old Rome when she collapsed and ushered in the thousand years of the Dark Ages.

Life on the farm must be made as attractive from the standpoint of human desires as the city or the red blood of the country will not stay there. It will take the New Agriculture to do this.

Let us look at two pictures: one of the old and one of the new agriculture.

In the old we see the farm not well kept. Crude tools were the only instruments of cultivation. There was nothing in evidence that suggested the idea of farm "machinery." One-horse plows and a few hoes and a wooden tooth drag constituted the farmer's plow tools. He had a two-horse wagon and a yoke of oxen or scrub team of horses or mules to pull it. The home itself suggested little or no refinement. There were no domestic conveniences to relieve the drudgery of the housewife. There was the small inconvenient kitchen with small cast stove, dishes few, and crude table. On the back porch or in the kitchen was the old washtub with its washboard, and the water bucket with its gourd. In the back yard was a bored or dug well, from which water was raised by windless. The floors were bare of carpets, the walls bare of pictures, the parlor bare of music, the living room bare of books. Nowhere was to be seen a thoroughbred horse, cow, hog,

sheep, goat, chicken, turkey or even a thoroughbred dog. Everything was scrub.

When crops was ready to sell the farmer loaded his stuff on his wagon and hauled it over bad roads to the nearest station or town and forced it on the market regardless of the price, he having no part in the trade but to deliver the goods.

The new agriculture presents a different picture.

The farm is well kept. Splendid barns, house, the stock and shelter, the feed and machinery. Silos furnish green feeds for the winter. Power machinery is in evidence. Not an animal is to be seen that is not up to standard. Thoroughbred cows, horses, hogs, fowls, sheep and goats are everywhere in evidence. The dwelling is a home in appearance as well as name, ample, convenient, sanitary, inviting. Carpets are on the floors, pictures on the wall, music in the drawing room, books, magazines and papers in the study. The kitchen is equipped with water, lights, range and cabinet. In the proper place there is a washing machine and churn, each run by a gasoline engine. There is the garage with its automobile and farm truck. From the front gate is a good road leading to town. Nearly half a million American farms are thus equipped.

When his crop is ready for market this modern farmer hauls it by truck to the marketing association, which he and his neighbors own. With finger on the markets it places the crops to the best advantage. When he purchases farm supplies in bulk this same agency buys it for him. He deposits his money in the bank, has some stationery printed with his business name on it and writes a letter to "his" Congressman telling him how he wants him to vote on bills affecting agriculture.

Birds build nests today just like they did among the rafters of Noah's Ark. They knew by instinct in the Garden of Eden just what they will know the last day of the world. This is the case with all animal life of the lower creation. Their limitations of progress were set from the beginning. The domestic animals have been developed to their limits. Like physical man they have their limitations of endurance and performance. Man has used domestic animals to their utmost, and is yet in need of more "horse power." Machinery comes in as an auxiliary, and it possesses qualities not possessed by the animal; it has

limitless power of endurance, infinite adaptation to the purposes of man and consumes no human or animal food.

Intellectual man has no limitations, no permanent horizon and no boundary of progress beyond which he may not go. When he has used an instrument to its utmost capacity he does not halt. Another is contrived to go further. He tilled the earth first by hand, then by ox and horse and next by machinery. He is continually laying aside one machine to take up another more efficient.

The development of the United States from a primeval forest inhabited by savages to the front rank of the world's civilization has been the most marvelous achievement of all time. It would not have been possible but for machinery of transportation, manufacture and farming. Though the oldest in point of discovery, and one of the first to be settled by Europeans, Florida is just now coming to her best in development. The lack of railroads, good roads, trucks and tractors has postponed her agricultural and industrial development. In the decade from 1880 to 1890 the number of miles of railroads in the state increased from 518 to 2,489, and the population increased 45 per cent. For the same period the taxable valuation of property increased over 100 per cent. The Florida East Coast Railway, running like a thread down the East Coast, transformed a barren waste to the "American Riviera." From Jacksonville to Biscayne Bay is a coastal land strewn with gems of tropical splendor that staggers the imagination. From the Ancient City of St. Augustine, with its landmarks of quaint fort and gate, to the Magic City of Miami, where beauty leaps beyond the dream the possibilities of Florida are exemplified. We reach the extreme limit at Key West, the peninsular gateway of America leading to the Southern World, with a daily schedule of airplane to Havana, Cuba, and return. Fort Myers, Punta Gorda, Bradentown, Tampa, Cedar Key, Apalachicola, St. Andrews and Pensacola furnish port entries on the west and are showing the results of commercial facilities.

Take the highland region of Central Florida and trace its marvelous development during the last ten years and you will find that four things have been prime factors that have enabled man to work the wonders that greet the traveler on every hand: railroads, good roads, trucks, and tractors. From Lake Lucerne to Lake Istokpoga is

a scenic region that the pen of a Sir Walter Scott would hand down to the centuries in immortal romance. There are millions of acres in other parts of Florida, which await the efforts of man with railroads, good roads, trucks, and tractors to make them blossom as the rose.

From Sanford to Sebring, and adjacent territory, there has been a phenomenal development during the last few years—showing the possibilities of the interior counties of the state. According to the Government Census Report of 1920, the average annual increase in the value of farm lands for the last ten years in Polk County has been 61%; of Hernando, 29%; of Pasco, 24%. These counties present no better opportunities to settlers than other counties that have been waiting all these years for the genius, energy, and thrift of a progressive citizenship. Florida is just being settled.

I look to the future with great hope. Science has come to the aid of the farmer the same as to technical and skilled artisans, and he is using it.

No longer a slave as in ancient times, a villain or serf as in the Dark Ages, nor the "Man with the Hoe," as painted by Millet and sung by Edwin Markham, nor the scarecrow of the caricaturist, he stands fore square with the world, tall, sun-crowned:

"The form and image of his God;
Has been as much of the first great plan,
Since Creation's dawn began
As any of the throng."

Instead of begging lenience of lords and rulers of all lands, he speaks of his own right and with authority in the councils of nations. Being his own statesman he moves to the moral conquest of the World.



Florida-Raised Angus Cattle, Irvine, Marion County, by L. K. Edwards

WORK OF THE LIVE STOCK SANITARY BOARD

(By W. A. McRae, State Commissioner of Agriculture)

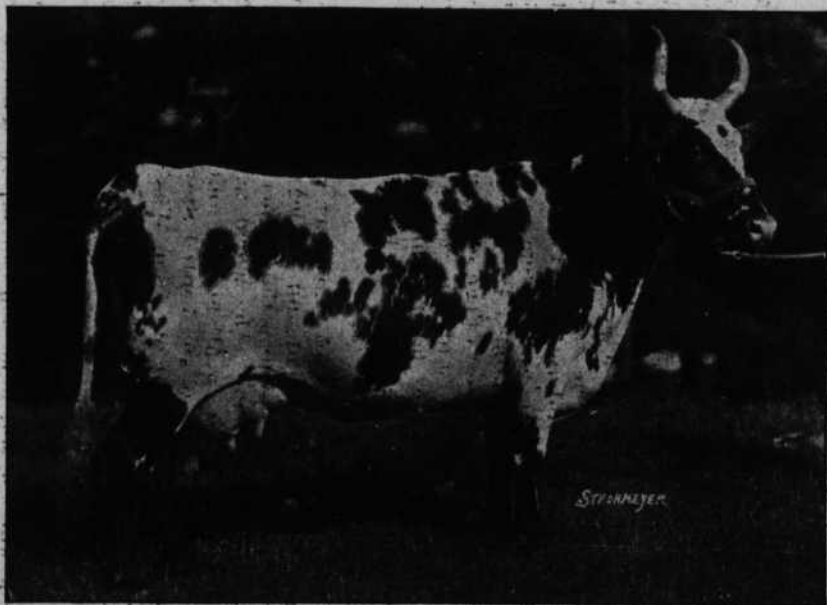
The subject of this address is very broad and covers the work of the State Livestock Sanitary Board from its creation by act of the legislature in 1917, to the present time.

There had been considerable educational work done in the state prior to the creation of the State Livestock Sanitary Board, and a small amount of regulatory work in hog cholera control. The forces doing this work were a chief veterinarian and two assistants, employed by the State Board of Health and Extension Division of the College of Agriculture, Gainesville. The field force of the Extension Division of the College of Agriculture consisted of one veterinarian and the county demonstration agents. These two forces labored unceasingly and there is no way of estimating the good they did the farmers and the stockmen of the state.

The creation of the State Livestock Sanitary Board was a progressive movement and the legislature that enacted the law will go down in the history of Florida as a progressive body of men. The world was in the midst of the most awful war in all history and the nations of the earth were looking to the United States for food and clothing. An appeal went out from Washington to raise more food crops, not only for our own use at home but for our soldier boys abroad, and for the soldiers and citizens of the allied nations.

Every state in the Union responded to the call for greater production, but none more promptly and none entered into the work more heroically than Florida. The era of the World War might be said to be the time when Floridians, stimulated as they were to do their full duty at the call of the Nation, accepted the opportunities thus offered and made the greatest effort in the history of the state in the movement for more and better agriculture and more and better livestock.

CHAMPION ROSE HILL SHI BO NADON
GRADE



Pure Bred Ayreshire, Grand Champion National Hog and Cattle Show, Atlanta, 1920. Highland Oaks Farm, Pierce, Florida.





Herd from Anthony Farms.

TICK ERADICATION

The first organized work the board entered into was that of the work of tick eradication. The Federal government, through the Bureau of Animal Industry, had already made a survey of the state with reference to tick eradication and was ready to join us in co-operation as quickly as our forces could be gotten together.

Dr. E. M. Nightbert, with an office in Jacksonville, was made inspector in charge of tick eradication and his force was soon organized, and co-operate efforts on the part of the State Livestock Sanitary Board and the Bureau of Tick Eradication was begun by the latter part of July, 1917.

The progressive livestock men in all parts of the state welcomed the advent of tick eradication. Requests came from every quarter for assistance in vat building and in dipping the cattle.

Vat construction was rushed, many of the counties making most liberal appropriations, and it seemed as if the whole state was going to be made tick free in a very short time. But, like all great movements, and in a sense a new movement, there was opposition which temporarily retarded the work.

A great deal has been done, however, and the work is going to continue till Florida is a "tick-free" state. The state cannot always remain a "free range" state, and after all that is where the greatest objections comes from.

The following summary will give you an idea of the work that has been accomplished, and is being accomplished in tick eradication:

Number vats built to Sept. 1, 1920.....	\$ 1,629
Number of cattle dipped during August, according to last compiled report.....	105,967
State livestock inspectors, exclusive of Federal force	29
Total expended by state to date.....	\$117,645.68
Total amount expended by all the counties, state and Federal governments, estimated.	\$750,000.00

The counties of Monroe, Dade, Broward and portions of Palm Beach, with an area of 6,218 square miles, declared tick free.

The legislature made a most generous appropriation for the work of the board. One hundred and fifty thousand dollars was appropriated when the law was enacted and the legislature of 1919 appropriated a like sum, thus giving the board \$75,000 a year. This appropriation supplied the board with ample funds, the board being hampered in its work during the years 1917 and 1918, only in keeping a sufficient force of trained men in the field to do the work. The veterinarians and laymen for the state and the Federal government, who were co-operating with the state in this work, were not exempt from war duty, and several times our joint forces were nearly all drafted into the service.

The work of the State Livestock Sanitary Board is divided into three parts, i. e., general administration, tick eradication and hog cholera control. Under the term "general administration" comes all the work of the board except that of tick eradication and hog cholera control.

HOW THE BOARD OPERATES.

To carry on the work in the best way, the board arranged a yearly budget, and divided the appropriation into three parts, as follows:

For general administration.....	\$15,000
For tick eradication.....	35,000
For hog cholera control.....	25,000

This division gives, for the four years, from July 1, 1917, to June 30, 1921, a total for each division of the work, as follows:

For tick eradication.....	\$140,000
For hog cholera control.....	100,000
General administration.....	60,000

The board has at all times tried to handle these funds as economically as possible and we have sufficient of the appropriation on hand to carry us to June 30, 1921, which closes our fiscal year, and carrying us beyond the next session of the legislature.



Herd from Southern States Land and Timber Company, West Palm Beach.

HOG CHOLERA CONTROL.

All records done by the state in hog cholera control, prior to the creation of the State Livestock Sanitary Board, 1917, were kept by the State Board of Health, and were turned over to the board in a small file about 18x24 inches, and consists largely of correspondence and some miscellaneous reports. This being the case it is impossible for me to give a correct record of the amount and kind of work done and the exact amount spent for this and other livestock work.

As stated before, this force consisted of a chief veterinarian and two assistants. A great deal of work was done by these men, but they could not do all the work needed because of the size of the state and the limited funds at their disposal. They did pioneer work and really laid the foundation for the larger work which was taken up by the State Livestock Sanitary Board.

There are three forces today in the state in hog cholera control:

The State Livestock Sanitary Board, the Bureau of Animal Industry, Washington, D. C., and the Extension Division of the College of Agriculture, Gainesville, both of the latter working in co-operation with the State Livestock Sanitary Board. While the work of the State Livestock Sanitary Board and the Bureau of Animal Industry is primarily regulatory, and the work of the Extension Division is primarily educational, yet it is a matter next to impossible for all of the forces not to do some educational work and the Extension Division, through its county agents not to do some regulatory work. I mean actually inoculating the hogs.

As in the matter of tick eradication, the Bureau of Animal Industry early recognized the splendid work being done by the State Livestock Board in hog cholera control, and sent Dr. L. E. Lyons to the state as inspector in charge of hog cholera, in March, 1918.

The effect of the draft was felt in this work also, and several times during 1917 and 1918, our forces were nearly all taken from us. By hard work we kept going and the results have been marvelous. The swine industry has developed almost beyond our fondest expectations. For

the fiscal year, July 1, 1918, to June 30, 1919, our force consisted of an average of six state men, five Federal men and the county agents in several of the counties.

The following is a summary of the number of hogs treated for this fiscal year:

	Sick Hogs	Well Hogs	Total
Federal veterinarians	2,341	27,763	32,073
Assistant state veterinarians.....	3,113	48,884	51,997
Local veterinarians	769	5,815	6,584
Laymen	74	1,804	1,878
County agents and others.....	1,474	20,216	21,690
Total	7,771	104,482	114,222

For the fiscal year, July 1, 1919, to June 30, 1920, the state had an average of twelve men, the Federal government four men, and the assistance of the county agents in a number of counties.

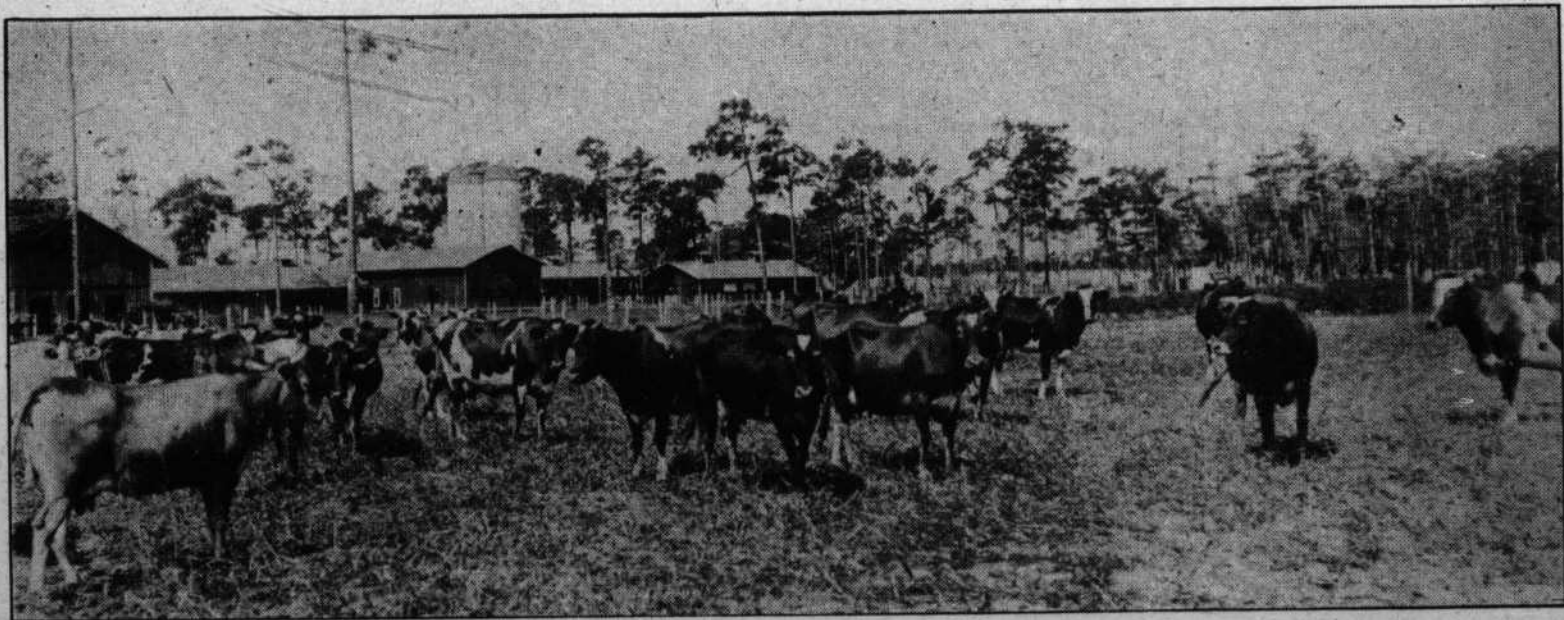
The following is a summary of the hogs treated for this fiscal year:

Federal veterinarians	18,525
Assistant state veterinarians.....	68,856
Practicing veterinarians	3,999
Non-grad.	4,490
Laymen	26,121
Total	121,991

The days of the razorback hog are numbered. There are large areas of the state today where the razorback cannot be found, and there is no section of the state, however remote, but in which may be found evidences of better breeding and the owners having learned that it pays to have better hogs and it pays to care for them.

RAISING PURE-BRED STOCK

Only a few years ago there were no real breeders of blooded hogs in Florida. Today we have some as good hogs bred in Florida as are bred anywhere on the American continent.



Herd from Southern States Land and Timber Company, West Palm Beach.

Our neighbor, Z. C. Herlong, December, 1919, took sweep-stakes at the International Livestock Show, Chicago, for the best Poland China hog, and a few days ago a gentleman from our neighboring state, Georgia, came to Florida and took his herd boar, leaving him a small check for \$15,000. It was not dreamed that such a thing could happen in this state in so short a time, but it happened. This \$15,000 board was bred and reared in Marion County.

We take off our hats to Z. C. Herlong, breeder of Poland China hogs, Miccanopy, and to the following breeders, who have done and are doing so much to develop the swine industry in this state:

Ramsey & Willis, Evanston—Duroc.
 Burdette Loomis, Pierce—Duroc.
 Beecham Stock Farm, Alachua—Poland China.
 L. S. Harvard, Live Oak, Poland China.
 W. C. Blood, Ocala—Poland China.
 H. H. Simmons, Jacksonville—Poland China.
 Charles Baisden, Live Oak—Durocs.
 Wirthland Farms, Monticello—Durocs.
 F. M. Burt, DeLeon Springs—Durocs.
 J. J. Logan, Jacksonville—Durocs.
 H. F. Bostick, Quincy—Durocs.
 R. W. Dunlap, Green Cove Springs—Durocs.
 W. H. Gist, Miccanopy—Poland China.

There are other progressive farmers and swine breeders that time and space forbid me to name in this address, but whoever and wherever they are, they are part and parcel of a great progressive movement that will place Florida, in a short time, in the forefront as a livestock state.

It is safe to say that the high class blooded swine, in the herds of these breeders I have mentioned above could not be purchased for one-quarter of a million dollars.

Co-operative tuberculosis eradication was started in May, 1918, with only two men in the field, Dr. J. C. Fish, inspector in charge of tuberculosis eradication, representing the Bureau of Animal Industry, Washington, D. C., and Dr. W. A. Munsell, representing the State Livestock Sanitary Board.

Work of actual eradication began at once. A herd of 250 cattle, mostly pure-bred beef cattle, were tested and the test disclosed six reactors. These reactors were promptly taken out of the herd and slaughtered. On a retest a year later, four reactors of various stages were found and slaughtered. On a second retest six months later, one reactor was found, and it was also slaughtered.

All of these reactors showed tuberculosis lesions, of various stages of development, at time of slaughter, except four. If a laboratory or microscopic examination of the glands of the four could have been made, the chances are that tuberculosis would have been found.

From the very beginning of this work herd owners have given the authorities splendid co-operation. The demand for this work soon became so great that it was necessary to place a much larger force in the field and at the present time the Federal force consists of an inspector in charge of the five veterinarians, while the state force consists of six veterinarians.

Recognizing the importance of the work of tuberculosis eradication and appreciating the splendid co-operation between the state and the Federal authorities, the Bureau of Animal Industry established an office, in Tallahassee, for the inspector in charge of tuberculosis eradication, and in addition to the field force, he also has a stenographer.

The authorities in co-operation, realizing the importance of eradicating tuberculosis in the dairy herds, have made the first test of the herds supplying dairy products to all the principal towns and cities. The herds around the larger towns and cities, where cattle from other states have been brought in, have given over 90 per cent. of all the reactors found, thus disclosing the fact that Florida-raised cattle, which do not come in contact with cattle from other states, are practically free from tuberculosis.

Going back just a little, will say that in one community, which is now being gone over for the second time, we are getting less than 1 per cent. reactors, which on the first round gave over 14 per cent. reactors, all of which disclosed lesions on slaughter.



Silo at State Prison, Raiford.

The following will give some idea of the work of tuberculosis eradication in Florida from the beginning of the work, May, 1918, to date:

Number of herds tested.....	1,337
Number of cattle tested.....	23,390
Number of reactors disclosed.....	812
Number of reactors slaughtered.....	734
Number of reactors showing lesions.....	716

We have now thirty-four accredited herds and more that are eligible and in due course will be placed on the accredited list.

The work having advanced so rapidly there is now being taken up what is termed area work. That is taking a certain territory and testing all the dairy herds and all the beef herds, except those known as piney woods or scrub cattle, and if no reactors, or if only a few are found, such area will officially be declared tuberculosis free. Enough of the piney woods or scrub cattle have been tested to disclose the fact that tuberculosis does not exist among them. Area work is now going on in Leon county and if no more tuberculosis animals are found than have been so far, Leon county will be officially declared tuberculosis free by spring of 1921.

COMMERCIAL AGRICULTURE

By T. J. Brooks, Chief Clerk, Department of Agriculture.

Economists often group commerce with production.

Production is the "bringing into existence" from previous materials.

Commerce is "the exchange of goods."

Consumption is the "distruction, or using up of things."

As commerce brings nothing into existence and puts nothing out of existence, it is distinct from both production and consumption. The wearing out of machines of production is called "productive consumption." As commerce "wears" and to a small degree "uses up" it is more closely related to consumption than to production.

In this article "Commercial Agriculture" is meant to include all transactions called into play, from the last act of the farmer that adds quantity or quality to his products to the placing of those products in the hands of him who is to perform a manufacturing operation, or in case no further changes of the products are necessary, to the placing of the products in the hands of the final consumer—the handling of all surplus products—and to buying his supplies

The marketing of grain, livestock, cotton, vegetables, etc., is just as much commercial business as the buying and selling of dry goods, groceries and hardware. The buying of farm supplies is as much commercial business as buying the raw materials and selling the output of factories. But it is not producing.

If farmers neglect this phase of agriculture they will sustain the loss incident thereto just the same as to neglect the soil in the field or the stock in the pasture. Waste in handling a crop after it is produced is just as much a loss as waste in producing it.

The task of building a satisfying rural civilization for the future is too broad to be confined to the narrow limits of seeing how much crop can be gotten from a row. This is a fundamental start, but it is not all the task. The functions of farming must broaden as does other lines in order to keep step with the march of progress.

The aggregate amount of business transactions carried on by farmers of a purely commercial nature is enormous. Commercial agriculture deserves its full consideration. The farmer is a manufacturer whose instruments are his machinery, live stock and the elements of nature; a merchant who sells the output of his plants; a transporter whose trains and ships are his vehicles; a consumer who purchases material brought from all peoples; a producer who furnishes the raw materials that go to feed and clothe the human race.

All the expenses that are incurred in any and all of these transactions that are not necessary are taxed against the consumer, who pays it all. Therefore, it is of importance to the consumer that the producer perform his functions in the most economical way.

One of the most important lessons learned in recent years by the wonderful strides in modern business and industry is that big business when properly directed is more economical than small business, and that individuals of small affairs can co-operate and get the benefits of large business owned and conducted by a few.

Co-operative business has made great strides in recent years. It is a means to an end. The co-operative association is not a more efficient business organization than a joint stock company but it guarantees a fulfillment of the law of equity and fair treatment for the smallest member—one man one vote—and all net profits go back to the grower instead of to the heavy stockholders.

By consulting the outlines of business methods included herein it will be easy to discriminate between the various kinds and get acquainted with the fundamental principle involved in each.

The only means of support of a co-operative association is the fees or commissions charged for handling products sold or bought. The amount charged is of little consequence to the member of the association as he gets it all back after expenses are paid.

You do not take stock in a co-operative association for the same reason that you do in an ordinary joint stock corporation: in the first instance you are looking for savings on sales and purchases and in the second you are looking for dividends on stock.

For the present we shall consider the associations of a permanent nature, requiring by-laws and officers; they may be legally incorporated or not, but they partake of the nature of permanent bodies with a definite standing and purpose.

In point of history collective buying is older than collective selling or collective financing and is of English origin. It was intended to serve the city consumer. This phase of co-operation has never flourished in America as in Europe. Co-operative selling of farm products has developed wonderfully of recent years in the United States. The buyer is a bear and the seller a bull in all markets. They approach the point of trade from opposite directions, each looking out for himself. This is the law of commerce in all times and places.

Direct trading between co-operative buyers and co-operative sellers has never been carried on to any great extent. Each has developed independent of the other.

There will always be a half-way point between source and destination of products where the issues of value and price must be decided, whether on the basis of equity, justice, chance or economic force.

The seller looks to the high retail price and strives to get as near it as possible. The buyer looks to the first cost and strives to get as near it as possible.

CO-OPERATIVE BUYING

The centers of co-operative buying in this country are in California, Illinois, Minnesota, Wisconsin, Pennsylvania, the Dakotas, Oregon, Kansas and New York—the home of the Co-operative League of America.

The Co-operative Wholesale Society, with its affiliated retail societies, is one of the largest concerns in the world, commercial or otherwise. The parent wholesale company has a turnover of \$340,000,000 annually, and the retail associations run the amount to approximately \$1,000,000,000. And all this started from a few poor weavers starting a little co-operative buying in 1847. This British co-operative company owns numerous factories of various kinds, owns its own banks—financing itself, to a great extent, from the deposits of its own customers and members. Its interests are distributed over England with branches in Denmark, Ireland, India, Canada and the

United States, and it has ships on the high seas. Similar societies have sprung up all over Continental Europe. The writer saw these societies at work and showing vigorous life even in the far interior of Russia the year before the World War. It so happened that after the war and Russia was still in the throes of civil revolution, no foreign governments having recognized the existing authorities, the first international agreements on commercial lines with the Russian people were not made with the government but with the Co-operative Society with its affiliated branches. It had weathered the storms of the war with Germany and Austria, and a prolonged civil revolution that slaughtered her own people and disturbed the peace of the world!

Co-operative banking originated in Germany and, in its various forms, now encircles the world.

CO-OPERATIVE SELLING BY FARMERS IN THE UNITED STATES

In the corn belt it is mainly the Farm Bureau; further west and south it is the Farmers' Union; in North Dakota it is the Nonpartisan League; in the north central States the Society of Equity and Gleaners are most active; in the northeast and northwest it is the Grange.

Commercially the most effective organizations are those handling products of restricted area of production and general in use. Often these have no connection whatever with any general organization,—such as those named above. Mere local associations can do little in handling a staple commodity grown on a large area,—like cotton, wheat, tobacco, etc. The growers must be organized from a commodity standpoint and control the commodity.

Perishables can be handled by local associations as well as any, as green, truck-stuff must be sold immediately regardless of markets. Marketing it is mainly a question of keeping track of the markets and routing the cars.

The commodity basis of organization is exemplified by the associations handling citrus fruits, prunes, raisins, and nuts in California, and the Citrus Exchange of Florida.

Local associations handling perishables is successfully exemplified by the East Shore of Virginia Association which handles potatoes, berries and garden vege-

tables. Creamery and poultry products handled by the Catawba Creamery Company, of Hickory, North Carolina, is an example of what can be done. It sold \$700,000 worth of creamery products in 1920 and the prospects are for a round million in 1921. The cheese and butter makers of Wisconsin, Minnesota, and Iowa follow co-operative marketing. The apple growers of Oregon and melon growers of Colorado know the advantages of co-operative selling. As no one organization has ever covered the tobacco districts the growers have had a checkered career in their attempts at organized selling. The same is true of the peanut business. For this and other reasons efforts to market the cotton crop co-operatively have failed.

There are about 14,000 farmers' buying and selling organizations in the United States doing hundreds of millions of dollars worth of business annually—and the movement in this direction is constantly growing despite the hindrances and failures that can be pointed out by the critic.

Kansas furnishes an example of a complex system of farm organizations. The Farmers' Union of Kansas is a State unit of the National Farmers' Union. It has its initiation fees and dues, with more than a thousand local unions in the State. This organization owns no enterprises of itself. It is an educational and propaganda organization. Through its teaching and organizing work the real business units are formed, each around some special project,—such as livestock commission company, jobbing association, mutual insurance company, co-operative stores, grain elevators, etc. Each of these is an independent, chartered entity in law—there being no legal connection between them. The stockholders in them are members of the Farmers' Union which is partly supported by an educational fund set aside by the several concerns above mentioned. This financial as well as moral connection gives vitality to the propaganda organization which has a nation-wide connection through the State membership in the national organization—the full name of which is The Farmers' Educational and Co-operative Union of America. The Kansas division has 150,000 men and women as members.

The various business enterprises thus fostered and developed in the State of Kansas had an annual volume of business of \$350,000,000 in 1920.

What is known as the "Inland Empire" is a great wheat belt of Idaho, Eastern Washington and Eastern Oregon. The main outlet for this wheat is to the Pacific where local markets are supplemented by shipping facilities to the Orient and through the Panama Canal.

They have a wheat growers' association in this district which requires contracts to be signed by its members to deliver to the association all the wheat marketed by the members for six years. The association is composed entirely of wheat growers, and this contract enables it to secure competent salesmen and fill contracts in large quantities by grades. When the wheat is delivered the grower is credited with so many bushels of such a grade or grades, and advances are made if immediate money is required. Every farmer receives the same price for his wheat at the end of the season, according to his grades and varieties, regardless of the amounts received for the various grades at different times through the year. Each receives the *average net price* received by the association for the grades which he delivered.

The California Fruit Growers' Exchange is twenty-five years old. It is the oldest and strongest farmers' organization, organized and operated on the commodity basis, in the United States. It builds packing-houses, in which the fruit of the members is assembled, graded, packed and made ready for shipment. It handles 75 per cent. of the citrus fruits of California—representing eight thousand growers. The citrus, prune, raisin and nut growers of that state sell through their associations approximately four hundred million dollars' worth of products annually. This system of selling is sometimes called "integrated marketing."

The system is constructed, (a) local associations of growers, through which the fruit is prepared for market; (b) the district exchanges into which the locals are federated, and which act as a clearing house for the locals; (c) the central exchange, which provides agents through which the district exchanges, in co-operation with the locals, distribute and market the fruit of the growers.

The Fruit Growers' Supply Company is a subsidiary company of the exchange. The two corporations are sep-

arate in law, but very closely connected in ownership and management. It began in 1907 with two employees, and now has an office force of 25, and carries 425 on the pay roll. It does a \$5,000,000 a year business. It will buy anything a member desires, but was organized especially to purchase orchard supplies—boxes, spraying machines, etc., and has extended its operations to accommodate members in other lines. In case an article is wanted on which the manufacturer puts a trade price, and will not sell to one who violates it, the regular price is charged and then rebated as excess charge or as profits at the stated periods of squaring of accounts. The purchasing power of eight thousand growers enables them to establish business connections with manufacturers and save all intermediate expenses. The purchaser gives his order to the local packing-house, which places the order with the main office in Los Angeles. The cash is paid or the local packing-house debits it against the purchaser in his account.

The Fruit Growers' Exchange uses nearly 20,000,000 crates a year. The Fruit Growers' Supply Company owns 26,940 acres of timber lands in northern California and southern Oregon. One of its mills has a daily capacity of 120,000 feet, and a box factory of 90,000 feet capacity. The exchange has a legal department, the same as other large corporations, nor does it neglect looking after legislative matters.

Only a few of the more conspicuous co-operative enterprises are here mentioned, as an explanation of the complete list would take a book. For a further discussion of this phase of the subject the reader is directed to the article by Mr. Ross, President of the Florida Citrus Exchange.

FEDERAL BONDED WAREHOUSES

The warehouse division of the United States Department of Agriculture will arrange with the State Bureaus of Markets whereby cotton that is stored in a warehouse bonded to the Federal Government may have a sample officially drawn and sent to the State Bureau of Markets, and the chief grader of the state—where the state has provided such—will grade and staple the cotton and send a certificate of same to the owner. This protects the owner against wrong grading—the service is free.

Florida has no such arrangement. Application for a national charter for warehouse must be made to the Warehouse Division of the Department of Agriculture, Washington, D. C. When a warehouse is thus chartered the local postmaster is instructed to furnish the warehouse with mail sacks, in which samples of the cotton stored may be sent to the State Bureau of Markets. Paper folders are furnished by the State Bureau, on the inside of which the warehouse man writes the number of the bale and its weight, the address of the owner and the warehouse. The mail is handled under government frank and requires no postage.

Secretary Meredith, in a recent address, said:

"I think it is highly desirable that the farmer should understand the importance of foreign marketing. He loses sight of his products when they pass out of his hands into those of the local dealer. It is therefore not brought home to him, in the ordinary course of business, that if the foreign outlet were blocked there would be left in this country frequently surpluses that would exert disastrous effects on the prices he receives. In 1919 the export business in agricultural products constituted approximately 55 per cent. of all export business. Agricultural products exported were worth about \$4,250,000,000, while all other products exported were worth \$3,500,000,000."

The Export Corporation, which the farmers and financiers who are willing to back the project are trying to establish and operate, is a furthering of the idea expressed by Secretary Meredith in the above quotation. Especially would this plan be of service just at this time when so many countries which consume large quantities of our products find themselves unable to finance their operations, thereby paralyzing international markets.

The cities, railroads, factories, etc., have been built by labor supported by farmers. Every mine, store, shop and industry of the world would have to shut down if farmers went on a strike. The margin between what he receives and what the consumer pays supports all between. The margin has been allowed to be governed by chance. A readjustment has commenced. System is being introduced, and the savings are in line with good economics.

CO-OPERATIVE AGRICULTURE

ADVANTAGES OF FARMERS ORGANIZING

1. *For Community Development:*

This reason alone is sufficient to render it worth while to organize. The need of a community center is recognized by all students of rural sociology. The many activities in which a community can engage to advantage are limited only by the resources and capabilities of the people composing it.

The local union can be made the center of these community activities. Many a worthy project is lost for lack of discussion by those who are in position to carry them out. No pronounced advance in rural civilization is possible without some vehicle of community endeavor answering the demands of collective life and progress.

2. *For Economic Advantage:*

The economic benefits of organization are exemplified in scores of instances in various countries of the world. The statistics will show that in a comparison of organized with unorganized communities that the organized always carry off the prize of prosperity. If there is money in it we would naturally suppose that it would be easy to get people interested. But when time-worn habits have to be changed and temporary inconveniences borne the task is not so easy as we might suppose. Oftimes little petty animosities are stronger factors working for division than all the cohesive forces working for unification.

3. *For Legislative Reasons:*

One of the necessary requirements of a good government is a lively interest and a participation in public affairs by its citizens. The vocation that recognizes this duty and privilege will have the advantage over those which neglect it. Nothing can be done in halls of legislation without intelligently directed effort. This is exemplified in all governments.

If the farmers are to receive due consideration at the hands of lawmakers they must have a way of expressing themselves collectively. That this can be done is conclusively shown by tracing back to their origin the laws,

both state and national, affecting the agriculture of America.

Organized farming, co-operative agriculture, collective business are a part of the program of the agriculture and rural life of the future.

There are now some 14,000 co-operative farmers' associations in the United States. They represent hundreds of thousands of producers, who are also consumers. They do a volume of business running over one billion dollars annually.

I want to leave two sentences with you, which taken together contain facts which you should digest and assimilate into your business operations:

HE WHO REFUSES TO WORK WITH HIS NEIGHBORS WILL BE WORKED ON BY SOME ONE ELSE.

GRAFTERS HAVE NO USE FOR CO-OPERATION; IT DOES NOT APPEAL TO THEIR CUPIDITY.

Take those sentences and analyze them and you will get a wholesome truth that will guide you in understanding the program of organized rural life.

The only way for the farmer to be independent is to have the commercial end of his vocation attended to on the same business principles that are followed by the big corporations—have specialists to operate for him under his direction and employ. For instance: A big manufacturing concern would not think of having the engineers or the bookkeepers or the stockholders do the selling of the output. Trained salesmen have charge of that end of the work and are depended on for results. The same principle is followed in co-operative marketing by the farmer. He has his business organization to attend to the selling of farm products and the buying of farm supplies.

There is no law preventing farmers being business men, and what I am talking about is merely the business end of farming. The only way to prevent being worked on by the profiteers is to attend to your own business, and you can't do that individually, it must be done collectively.

I want to draw a line of distinction between co-operative business and ordinary business methods. I am speaking now of co-operative business of such a character as to demand a regular incorporated organization to operate.

The ordinary corporation is chartered and operated for the benefit of the promoters and stockholders. All the profits go to them in proportion to the shares owned or the salaries that are paid the officers. Each share entitles the owner to one vote in a stockholders' meeting. The public is the field for exploitation.

The co-operative corporation is chartered and operated for the benefit of those who are to sell through it or buy through it. See? The capital invested is paid a legal rate of interest and no more. All the net profits are paid back to the members of the association in proportion to the volume of business furnished to the association by each member. Of course this method does not appeal to the grafter, the profiteer or even the speculator. It appeals to the producer and to none other. The producer puts money into that kind of business for the same reason that he buys a machine to use in making a crop. It is to do a work for him which he cannot do as well without it.

But there is a large field for co-operation where no chartered organization is needed. The county demonstration agents are helping the farmers to do an immense amount of business co-operatively with no organization whatever connected with it. During the past year the farmers of Mississippi did by this method a volume of business that netted a profit to them of \$769,000. An Alabama community marketed eleven cars of peanuts co-operatively one week with a profit of \$5,000. A few wool growers in Texas associated themselves and pooled 650,000 pounds of wool and saved \$60,000 by so doing. In some of our cities a few people got together last summer and ordered their coal by the car and saved a good margin. There is no one to accuse rightfully or wrongfully of profiteering when you attend to your own business. No one has a right to blame you for doing so collectively as well as individually.

Now a word as to the real advance that has been made in agricultural co-operation. Perhaps an instance or two would be worth while. The fruit growers of California are doing upwards of \$400,000,000 annually by this method. The fruit growers of Florida are doing millions by this method. The farmers of Kansas are doing over \$300,000,000 worth a year by this method. The

wheat growers of the extreme northwest are doing millions annually by this method.

Of the 2,800 counties in the United States having sufficient agriculture to warrant having a demonstration agent more than 2,000 have agents. Since the enactment of the Smith-Lever law in 1914 more than \$72,000,000 of federal, state and local funds have been spent in this co-operative work. A little more than half of this is being raised by the states and counties. The government thinks that it is worth while to encourage co-operation in production and other activities of rural life.

The various farm organizations of the United States are doing good work in encouraging co-operative endeavors. The Farmers' Union has done most of the work of this character that has been done in the South and in the Middle West and Northwest. It has never been erratic, spectacular or presumptuous, but has impressed itself on the thoughtful men of the country as an organization of noble purposes, high ethical standards and sound economic principles.

CO-OPERATIVE MARKETING THROUGH COUNTY AGENTS

The County Demonstration Agent's duties have broadened considerably since the institution of extension service. One of the duties added to his original project is the task of helping the farmers market their field crops and livestock. In some States this line of extension service has been pushed much faster than in others. The methods of shipping livestock will be presented as suggestive to all who are interested in co-operative marketing.

Marketing by this method requires no permanent organization, but it does not at all hinder the farmers from organizing permanently around each product or in a general way and securing the aid of the County Agent in making shipments and sales.

Hogs

In shipping livestock by the carload for numerous owners there are two methods of designating ownership.

1—By marking each man's hogs differently—having as many marks as there are shippers. This method has sev-

eral objectionable features: The educational side of co-operative shipping is lost when a lump sum is received for his hogs instead of being paid by grades. (This same lesson is lost when the commission men appear on the day of shipping and buy direct from the farmers—which is often done. The commercial features of the transaction are lacking and the sale is made on a local market to a representative of a commission man instead of to a local buyer. Even this way is preferable to the old way.)

To cut out, class and weigh a carload of hogs billed out by this method requires time which the commission man is unwilling to give at his end of the line, and he discourages this kind of shipments. If a hog gets injured or killed in transit the owner loses it, which is unfair. This is avoided by the grading method.

2—By grading and crediting each owner with so many pounds of such a grade. All losses are borne by the car shipment and not by individuals.

This requires more knowledge of grading than the marking method, but is much better. Hogs are bought at the stockyards on classes. They are graded according to a schedule of characterization.

A—As to Finish—

- (a) fat.
- (b) half fat.
- (c) poor flesh.
- (d) emaciated.

B—As to Special Characteristics—

- (a) barrows.
- (b) open gilts.
- (c) sows which have suckled.
- (d) males which have headed a herd.
- (e) boars are sold subject to government inspection; they should be castrated and afterward shipped as stags.
- (f) stags suffer a dock of seventy pounds.
- (g) sows showing "piggy" have a uniform dock of forty pounds—further docks are made of from 10 to 30 pounds for ruptures.

The following grades apply to barrows and open gilts well finished:

- No. 1—200 pounds and over.
- No. 2—165 pounds to 200.
- No. 3—130 pounds to 165.
- No. 4—100 pounds to 130.
- No. 5—100 pounds and under.

The other grades are handled according to degrees of finish in the same manner.

Packer sows are graded according to size, quality and finish.

Grade A—Choice, smooth, fat and heavy.

Grade B—Good quality but medium fat and light weight.

Grade C—Rough, thin and common quality.

Grade D—Skins—any class emaciated.

The main task for the beginner is to learn the different grades of finish. It is safest for the beginner to mark the different grades and write a letter to the commission-man explaining the grading and marking and request a detailed reply, explaining any deviation from the original grading. The marking by grades can be done by clipping each grade at a certain place on the hog.

Shipping hogs in hot weather requires considerable precaution and care from the time they leave the farm till unloaded at the stockyards. If they have been driven on foot they should be allowed to cool before loading. The cars should be well bedded with sand or clay. This bedding should be wet, before loading, and hogs should not be crowded in the cars. If car is allowed to stand in the sun additional wetting may be necessary—the water should be poured on the floor and not on the hogs. Burlaps hung from the roof of the car containing ice will keep the floor damp and cool—say six to the car containing 50 pounds each. In hot weather 15,000 pounds of hogs is the maximum load to put in a 36-foot car. All hogs should have standing room in any kind of weather. Do not start them to market full of swill. Fine coal distributed over the car floor is better than overfeeding.

CATTLE

Grading cattle is more difficult than classing hogs. This renders it necessary for the beginner to use the marking method. Mark by clipping the Roman notations I, II, III, IV, etc. These marks can be clipped on the hips, loins, or shoulders, and should be sufficiently large to be read at a distance of several feet. The commission man should be requested to report sale according to letter. Each owner has one mark or letter and his returns and expenses can be ascertained from the sale sheet, based on shipping weight at point of shipment.

Cattle cars should be bedded with straw or old hay. Bulls should be securely tied and crated off to themselves. Cows with sharp horns should be tied or horns sawed to quick.

When paint is used in marking hogs, cattle or sheep get good thick paint, add 25% varnish and 10% Japan dryer, apply with round brush about one inch in diameter.

MAKING SETTLEMENT

The most difficult part of the work in shipping cars of livestock co-operatively is the clerical job of making settlement with the owners. Right here let it be said that it is not necessary for the County Agent to make shipment in his own name. He usually gets some bank at the point of shipment to bill out the car and receive the statement of sales and checks from commission men. Most any bank will do this for the deposits it will bring to it.

There are several methods used in figuring loses and apportioning the amounts due the individual shippers. In giving one method there is no suggestion that there are not others just as good.

Suppose a car of hogs was billed out weighing 14,000 pounds, the weight returns showed 13,500 pounds, the price for half dozen grades ranged from \$10 a hundred to \$20 a hundred, freight charges \$60, yardage \$6, feed \$20, commissions \$18,—amount of check \$2,800.00,—how would it all be worked out?

The farmers were given a receipt at the scale with the weights of their hogs and it is easier to settle at these weights than at the stockyard weights, the shrink-

age to be cared for in the prices received. As an illustration of handling this feature of the business let's take a sample shipment and trace the various bookkeeping items:

30 No. 1 hogs weighing.....	8,000	pounds	
25 No. 2 hogs weighing.....	4,500	"	
10 No. A smooth packers....	1,500	"	
2 Stags	500	"	after dockage
3 Skins	434	"	
70	14,934		

The commission man sells the hogs and sends back the following statement:

29 hogs	7,502	@	\$20.00—	\$1,500.00
25 hogs	4,365	@	18.75—	818.43
10 hogs	1,455	@	18.50—	269.17
2 stags	485	@	16.25—	78.81
1 cripple	257	@	11.00—	28.27
3 skins	421	@	8.00—	33.68
70	14,485			\$2,726.36
Freight	\$60			
Yardage	6			
Feed	20			
Commissions	15			
	\$101			\$101.00
				\$2,625.36

In this case the shrinkage would be 449 pounds, or an average of 3%. Let's find the net price for the lowest grade in the lot and call all higher prices premiums. This is done by subtracting the premiums that the better hogs brought, and all local expenses, from the check and dividing by the total number of pounds shipped in the car.

The lowest priced hogs were the skins which sold for \$8 a hundred; the No. 1 hogs brought \$12 per hundred over the skins; No. 2 hogs brought \$10.75 more; the packers \$10.50 more; and stags \$6.25 more, and the cripple \$3.00 more.

No. 1	8,000 pounds @	\$12.00—	\$960.00
No. 2	4,500 pounds @	10.75—	483.75
No. 3 packers	1,500 pound @	10.50—	157.50
stags	500 pounds @	6.25—	31.25

Total premiums\$1,632.50

The total check received was \$2,625.36.

This amount less the premiums leaves the sum which would have been received had all hogs been skins and sold for 8 cents a pound, or \$992.86.

This amount, divided by the gross number of pounds, 14,934, gives \$6.648 or the net price of the skins.

The net prices for the other grades are ascertained by adding the premiums.

The stags sold for \$6.25 more, so they netted \$12.898 per hundred; the packers brought \$10.50 more, therefore netted \$17.48; the No. 2s \$10.75, net \$17.398; and No. 1s \$12.00, net \$18.648.

The next step is to verify the net prices by multiplying the weight in each class by the net price for that class.

No. 1	8,000 pounds @	\$18.648—	\$1,491.84
No. 2	4,500 pounds @	17.398—	782.91
No. 3 packers	1,500 pounds @	17.148—	257.22
stags	500 pounds @	12.898—	64.49
skins	434 pounds @	6.648—	28.85

\$2,625.33

The hog that was crippled en route weighed 257 pounds and brought 11c a pound. Being a number one originally and should have brought \$20 a hundred, it brought \$9 a hundred less. This loss is treated as a shrinkage—just as dead hogs are handled.

EQUIPMENT FOR WEIGHING, GRADING AND LOADING LIVESTOCK

Proper equipment in the way of stock pens should be furnished by the railroads at shipping points, but where no livestock trade has been established temporary arrangements will have to be made. The stock pen should be so built that the hogs can be driven in from the ground or let out from the hind gate of a wagon onto an incline platform leading down to the grading pen. From this grading pen they can be driven by grades on the scales,

weighed, and then driven into the loading pen with chute leading to the car.

With none of these equipments to start with a large strong crate can be built with door to enter and at other end door for leaving. A good pair of cotton scales will do to swing to a sweep pole to raise and lower the crate when weighing.

The following schedule of rates for commission men is allowed for car lots having more than one owner in addition to the rate on car lots having one owner:

For more than 1 and not more than 10 owners, \$2.

For more than 10 but not more than 20 owners, \$3.

For more than 20 owners, \$3.50; provided that in no case shall any one owner of such car lot pay a higher rate than the maximum charge for a car having a single owner.

REPORTS FROM COUNTY AGENTS

The following have been recently reported to the office of the Commissioner of Agriculture by the County Agents, showing initial co-operative efforts which bid fair to spread throughout the State.

Escambia County: J. S. Smith, Agent. Won first prize in general farming exhibit at the State Fair at Jacksonville, November, 1920.

He reports:

- Fig City Growers' Association.
- Barrineau Park Farmers' Society.
- Gonzales Farmers' Association.
- Ferry Pass Farmers' Association.
- Cottage Hill Farmers' Association.
- Bomansville Produce Association of McDavid.
- Pratt Produce Growers' Association.
- Oak Grove Farmers' Association.
- Sunshine Hill Community Council.

Holmes County: J. J. Sechrest, Agent, reports several farmers' unions.

Polk County: Wm. Gomme, Agent, reports several units of the Citrus Exchange. Does co-operative selling and buying for farmers.

Volusia County: W. E. Dunnaway, Agent. This county has several community councils.

Alachua County: C. D. Gunn, Agent. Several farmers' unions and community councils are affiliated with the Farm Bureau Federation.

Manatee County: W. R. Briggs, Agent. Units of the Citrus Exchange and co-operative vegetable marketing associations.

Dade County: J. S. Rainey, Agent. Has the Dade County Poultry Association, which handles pure bred stocks and markets stamped and graded eggs.

Walton County: J. W. Mathison, Agent. Has Swine Breeders' Association and Blue Berry Association, each doing effective service.

Suwanee County: D. A. Armstrong, Agent. Has five community councils of agriculture and home economics, affiliated with the Farm Bureau.

Osceola County: L. H. Wilson, Agent. Has several community councils.

Seminole County: C. M. Berny, Agent. Has two farmers marketing and purchasing associations—Sanford Farmers' Exchange and the Sanford Truck Growers, Inc. These two associations market about two thousand cars of perishable truck crops per year. Affiliated with Farm Bureau.

Palm Beach County: R. A. Conkling, Agent. Has several community organizations.

Brevard County: K. E. Bragdon, Agent. Has number of citrus sub-exchanges and a beekeepers' association.

Columbia County: H. A. McDonald, Agent. Has Fort White Community Council, Columbia County Melon Association and several farmers' union locals.

Marion County: Wm. A. Sessoms, Agent. Sub-Citrus Exchange and fourteen locals of farmers' union.

Bay County: G. E. Mead, Agent. The farmers buy co-operatively through the services of the Agent fertilizer, corn, peas, peanuts, farm machinery.

Orange County: C. D. Kime, Agent. Has Dairy Association, Citrus Exchange and community councils.

Okaloosa County: R. J. Hart, Agent. Has Sweet Potato Growers' Association, Bureau of Information and Marketing, with a Business Manager, whose duties are to keep posted on markets and advise with growers, place buyers and sellers in communities and make orders in bulk.

Leon County: R. I. Mathews, Agent. Dairymen ship one thousand gallons of sweet milk per day to Jacksonville under contract.

These are only a few of the evidences of co-operative endeavor among the farmers of the state.

If what has been said herein helps to encourage and assist in the future co-operative work in agricultural development the purpose to further this line of endeavor will have been attained and the aim to serve will have been accomplished.

AGRICULTURAL OUTLINES

By T. J. Brooks, Chief Clerk, Department of Agriculture

DIVISIONS OF AGRICULTURE

Rural problems embrace three superordinate divisions.

1—PRODUCTIVE AGRICULTURE, which requires a knowledge of:

A. Soils—

- (a) composition.
- (b) physical condition.
- (c) fertilization.
- (d) cultivation.

B. Plants—

- (a) biology.
- (b) pathology.
- (c) husbandry.

C. Animals—

- (a) breeds.
- (b) pathology.
- (c) husbandry.

D. Machinery: its care, use and adaptability.

E. Climate: its influence on soils, plants and animals.

F. Seasons: their relations to animal and plant life.

2—BUSINESS AGRICULTURE, which includes—

A. Farm Management—

- (a) adaptation of crops to soils.
- (b) relation of operating to investment capital.
- (c) cultivation under ownership, lease or rental.
- (d) engineering.
- (e) cost accounting.

B. Commercial phases—

- (a) buying farm supplies individually and collectively.
- (b) selling farm products individually and collectively.

C. Financing—

- (a) individually.
- (b) collectively.

3—SOCIOLOGICAL AGRICULTURE, which covers those phases of rural life that affect the citizenship as a whole—including—

- (a) rural economics.
- (b) education.
- (c) recreation.
- (d) social life.
- (e) community spirit.
- (f) rural civics.

CO-OPERATIVE ORGANIZATIONS

1—AS TO KIND—

- (a) permanent organizations, incorporated, capitalized or non-capitalized, and operating under a constitution and by-laws.
- (b) emergency organizations without officers or legal existence, such as livestock shipping associations conducted by the County Demonstration Agent.

2—AS TO METHOD—

- (a) chartered and capitalized.
- (b) non-capitalized; may or may not be chartered.

3—AS TO PURPOSE—

- (a) commercial.
- (b) industrial.
- (c) financial.
- (d) educational.
- (e) philanthropic.
- (f) fraternal.

NON-CO-OPERATIVE CORPORATIONS

CHARACTERISTICS

- 1—Organized and operated for profit to the promoters and stockholders.
- 2—Grants each share a vote, or limit all voting to a restricted share ownership—such as a Voting Board, Owners or Common Stock, Board of Trust, etc.
- 3—Places no limit on number of shares an individual may own.
- 4—Places no restrictions on the transfer of stock.
- 5—Distributes all net profits as dividends on capital stock issued, whether the stock was paid for in cash—at par or below par—in service, or given away.

RELATIONSHIP OF STOCKHOLDER, EMPLOYEE
AND CUSTOMER IN EACH OF THE THREE
KINDS OF COMMERCIAL CORPORATIONS

JOINT STOCK—

- 1—Stockholder; all the profits, vote per shares.
- 2—Employee; wages only.
- 3—Customer; pays the bill.
- 4—No power to control transfer of stock.

CO-PARTNERSHIP—

- 1—Stockholder; most of profits, vote per shares.
- 2—Employee; wages and a bonus of some amount.
- 3—Customer; pays the bill.
- 4—No power to control transfer of stock.

CO-OPERATIVE—

- 1—Stockholder; a specified rate of interest on his money; one man, one vote.
- 2—Employee; wages and in some instances a part of profits.

- 3—Customer; gets as rebate all above the cost of the business patronized, including interest on capital invested and the running expenses, in proportion to his patronage, double rebate to members that is given to the non-member.
- 4—Stocks transferable only by vote of the stockholders.

RELATIONSHIP OF MEMBERS OF NON-CAPITALIZED CORPORATIONS WITH EACH OTHER AND WITH THE CHARTERED BODY

FRATERNITIES—

- 1—Member pays uniform entrance fee.
- 2—Has equal voting power on all questions.
- 3—Pays annual dues uniform to all members.
- 4—May be expelled for misconduct.
- 5—May be dropped from roll for non-payment of dues.
- 6—Chartered body has a right to charter subordinate bodies and charge therefor.
- 7—Membership not transferable.

BENEFITS OF CO-OPERATIVE MARKETING

(When Permanent Organization Is Required)

- 1—Standardizes quality.
- 2—Gives character to brands.
- 3—Secures trade privileges.
- 4—Eliminates all avoidable expense in marketing and returns all net profits to the grower.
- 5—Improves grading and packing.
- 6—Obtains and utilizes market information.
- 7—Develops old markets and finds new ones.
- 8—Instructs the farmer in business methods.

ESSENTIALS OF SUCCESS

(When Permanent Organization Is Required)

- 1—Need for the enterprise—
 - (a) community interest in some special project.
 - (b) appreciation of the principles of co-operative business.

- (c) possibility of sufficient volume of business to carry on the organization at a low per cent of overhead charges.
- 2—Availability of markets—
 - (a) as to distance.
 - (b) as to transportation facilities.
 - (c) as to expense of reaching the consumer.
- 3—Contract loyalty: Patronage assured by contracts for the delivery of products for a period of time, making up an approximate amount to be used by the manager as basis for building up trade.
- 4—Efficient management: Judicious use of investment and operating funds and efficiency in marketing processes.

CARDINAL PRINCIPLES

(Permanent Organizations)

The cardinal principles of co-operative business are:

- 1—Return on capital invested restricted to medium rate of interest.
- 2—All net profits returned to members in accordance with patronage.
- 3—One member one vote, regardless of number of shares owned.
- 4—Option must be given the Association on all shares offered for sale and all transfers must be approved by the association.

POSSIBILITIES OF CO-OPERATION AMONG MARKET BUREAUS

- 1—Co-operation among State Bureaus—
 - 1—By interchange of information—
 - 1—Exchange of "want and for sale" lists.
 - 2—Exchange of bulletins.
 - 3—Exchange of telegraphic quotations when receiver requests at his expense.
 - 2—By interchange of specialists in market agent service.
 - 3—By co-operation in inspection service.
 - 4—By co-operation in making consignments of shipments.

- 5—By co-operation in making purchase in car lots.
- 6—By co-operation in making collections of accounts.
- 2—Co-operation of National and State Bureaus—
 - 1—By mutual exchange of all information documents.
 - 2—By all market quotations of National Bureau going to all State Bureaus—whether printed or telegraphic.
 - 3—By specialists from National Bureau visiting State Bureaus for consultation and instruction.

It is quite evident that co-operation is impossible except on such points as are held in common. As it stands at present only three states can co-operate in the work of actually buying and selling—Florida, Oklahoma and West Virginia.

There is no reason why the Bureau of Florida could not consign a car of citrus fruit to the Bureau of West Virginia and have the consignee place it on the market and remit to the consignor. There is no reason why the Florida Bureau could not order for his people a car of Virginia apples from the Virginia Market Bureau and remit on its arrival in good order. But unless Virginia allows her Bureau to do actual business this can not be carried on, and Florida would have to give West Virginia Bureau or to Oklahoma Bureau, and in case they neither had the article wanted the order would have to be placed with regular dealers. I am not presuming that all large interstate transactions should be done only through State Market Bureaus, but am simply making these suggestions to show the handicap on co-operation as the situation now stands.

A market bureau in Florida might make splendid service of a market bureau in New York in the collection of accounts, in the inspection service and in making consignments of shipments. Wherever the accommodation was mostly on one side a schedule of charges could be worked out and adhered to that would be reasonable and just. By interchange of specialists in market agent service I mean that where states near each other have specialists in market service that there could be arrangements made whereby the states exchange two agents for a time—each working in his special line, which may move as the seasons change from one state to another.

Exchange of printed information is already in vogue and needs no elaboration.

COMPARATIVE FEATURES OF STATE MARKET BUREAUS

1—Location:

1—At Capital—

Alabama, Georgia, Idaho, Louisiana, Minnesota,
New Jersey, Ohio, Oklahoma, South Carolina,
North Carolina, Nebraska, Wisconsin, New York.

2—At important commercial center—

California, Florida, West Virginia.

3—At educational institution—

Kentucky, Washington.

2—Connections:

1—With State Department of Agriculture—

Alabama, Idaho, Louisiana, Minnesota, Nebraska,
Ohio, Oklahoma, South Carolina, North Carolina.

2—Co-ordinate with Department of Agriculture as a unit:

New York.

3—Nominal connection with Department of Agriculture—

Florida, New Jersey.

4—With educational institution—

Kentucky, Washington.

5—Not connected with any other department of state—

California, Wisconsin.

3—Functions:

1—Buy and sell for farmers—

Oklahoma, Florida, West Virginia.

2—Furnish information—publicity—

All of them.

3—Grading, inspecting warehouse supervision—

Oklahoma, Florida, Idaho.

4—Collecting accounts—

Florida.

5—Organizing associations—

Oklahoma.

Minnesota.

OUTLINE OF LEGITIMATE FUNCTIONS OF A STATE BUREAU OF MARKETS

1—Furnishing Information:

- 1—By issuing bulletins.
- 2—By sending out "want" and "for sale" lists.
- 3—By furnishing price quotations
 - 1—On printed sheets,
 - 2—On mimeograph letter.
 - 3—By telegraph.
- 4—By furnishing shippers information concerning the financial rating, etc., of commission men and other prospective customers.
- 5—By publicity.
 - 1—By furnishing the press of the State with timely articles on markets and marketing, shipping, packing, production, etc., affecting markets.
 - 2—By sending speakers to meetings of farmers and commercial bodies to discuss marketing and kindred problems.

2—Demonstrating:

- 1—By furnishing market agents to visit points of shipment and instruct in grading, packing and shipping; to instruct managers of co-operative shipping associations when requested.
- 2—By co-operating with industrial agents and others in demonstrating in kiln-drying potatoes, warehousing, etc.

3—Inspecting:

- 1—By inspecting cars at point of destination for protection of shipper against fraudulent reports.
- 2—By examining methods of commission men.
- 3—By inspecting warehouses as to damage and as to methods.

4—Organizing Co-operative Associations:

5—Doing actual business for farmers:

- 1—By selling products shipped to the Bureau in any quantity large or small.
- 2—By routing cars to market from any point to any point and directing the sale and collecting and paying the shipper for the shipment.

- 3—By collecting accounts placed in hands of bureau by shippers.
- 4—By bringing the buyer and seller together by letter or wire and letting them do the actual trading independent of the bureau.
- 5—By placing quantity orders for farmers.

LAWS ON CO-OPERATIVE BUSINESS IN FLORIDA.

CHAPTER 7384—(No. 126).

AN ACT Relating to Co-Operative Associations and to Authorize Their Incorporation, and to Declare an Emergency.

Be It Enacted by the Legislature of the State of Florida:

Section 1. For the purpose of this Act, the words "co-operative company, corporation or association" are defined to mean a company, corporation or association which authorizes the distribution in part or wholly, on the basis of, or in proportion to, the amount of property bought from or sold to members, and other customers, or of labor performed, or other service rendered to the corporation.

Sec. 2. Any number of persons, not less than ten may be associated and incorporated for the co-operative transaction of any lawful business, irrigation ditches, bridges, and other works of internal improvement.

Sec. 3. Every co-operative corporation as such, has power: First—to have succession by its corporate name. Second—to sue and be sued, to complain and defend in the courts of law and equity. Third—to make and use a common seal, and alter same at pleasure. Fourth—to hold personal estate, and all such real estate as may be necessary for the legitimate business of the corporation. Fifth—to regulate and limit the right of stockholders to transfer their stock. Sixth—to appoint such subordinate officers and agents as the business of the corporation shall require, and to allow them suitable compensation therefor. Seventh—to make by-laws, for the management of its

affairs and provide therein the terms and limitations of stock ownership, and for the distribution of its earnings.

Sec. 4. The powers enumerated in the preceding section shall vest in every co-operative corporation in this State, whether the same be formed without, or by legislative enactment, although that may not be specified in the charter or in its articles of association.

Sec. 5. The fees for the incorporation of co-operative corporations or associations shall be the same amount as those provided for like capitalization of general corporations in the State of Florida; Provided that any co-operative corporation or association, being such under the definition given under Section (1) of this Act is hereby authorized to file with the Secretary of State a declaration signed by its president and secretary stating that it is a co-operative corporation or association as above defined, who shall issue to said corporation a charter in the usual form, and from and after the filing of such declaration with the Secretary of State, and the issuance of said charter, it shall be entitled to the same legal recognition as other corporations organized under the laws of this State, and the fee for filing such declaration shall be two dollars.

Sec. 6. Be it further enacted that the stockholders of any co-operative association or business can under the provisions of this Act govern the association or business by purely co-operative custom, of one man, one vote, this however to be left optionary with the stockholders of the Association.

Sec. 7. This Act shall take effect immediately upon its passage and approval by the Governor.

Approved May 21, 1917.

CORPORATIONS NOT FOR PROFIT.

2830. (2259.) Authority to Incorporate and Manner of Incorporation.—Any five or more persons, wishing to form a religious society, lodge of Masons or any other similar order, debating or literary society, library company, benevolent or charitable association, scientific institution of learning, or cemetery company, may become incorporated in the following manner:

They shall present to the judge of the circuit court for the proper county a proposed charter subscribed by the intended incorporators, which shall set forth:

1st. The name of the corporation and place where it is to be located.

2d. The general nature of the object of the corporation.

3d. The qualification of members and the manner of their admission.

4th. The term for which it is to exist.

5th. The names and residence of the subscribers.

6th. By what officers the affairs of the corporation are to be managed, and the times at which they will be elected or appointed.

7th. The names of the officers who are to manage all the affairs until the first election or appointment under the charter.

8th. By whom the by-laws of the corporation are to be made, altered or rescinded.

9th. The highest amount of indebtedness or liability to which the corporation may at any time subject itself, which shall never be greater than two-thirds of the value of the property of the corporation.

10th. The amount in value of the real estate which the corporation may hold, subject always to the approval of the circuit judge.

The proposed charter shall be acknowledged by some one of the subscribers before some officer authorized to take acknowledgments of deeds, which subscriber shall also make and subscribe an oath, to be endorsed on the proposed charter, that it is intended in good faith to carry out the purposes and objects set forth therein. Notice of the intention to apply to the circuit judge for any such charter, stating the time when the application will be made, shall be published in one newspaper in the proper county for four weeks, once each week, setting forth briefly the character and object of the corporation to be formed. The proposed charter, with proof of publication, shall be produced to the circuit judge at the time named in the notice, and if no cause be shown to the contrary, and if he find it to be in proper form and for an object authorized by this chapter, the circuit judge shall approve it and endorse his approval thereon. The charter, with all its endorsements, shall then be recorded in the office of the clerk of the circuit court, and from

thenceforth the subscribers and their associates and successors shall be a corporation by the name given. The proposed charter, during the time of publication, must be filed in the office of the clerk of the circuit court.

2831. (2260.) Evidence of Incorporation.—The original charter, with the certificate of the recording thereof in the clerk's office endorsed thereon, or a copy from the record thereof, certified by the said clerk, shall be evidence of the contents of the charter in all actions and proceedings, and shall be conclusive evidence of the existence of the corporation in all actions and proceedings where the question of its existence is only collaterally involved, and prima facie evidence in all other actions and proceedings.

2832. (2261.) Amendment of Charter.—Any such corporation desiring to amend its charter may do so by resolution as provided in the by-laws, which amendment, upon publication of notice, and approval by the Circuit Judge and recording in the Clerk's office as aforesaid, shall become and be taken as part of the original charter.

2833. Limit of Indebtedness.—Any corporation not for profit heretofore or hereafter formed may subject itself to indebtedness or liability in the aggregate not greater than the specific amount stated in its charter, or an amendment thereto, or not beyond a limit, specific or relative, set forth in its charter, or an amendment thereto; and this power shall exist without regard to whether such amount or limit is greater or less than two-thirds of the value of its property.

2834. Bonded or Mortgage Indebtedness.—Any corporation not for profit heretofore or hereafter formed may subject itself to specific bonded or mortgage indebtedness, in addition to or without regard to its general power or limit as to indebtedness or liability, by setting forth in the charter, or in an amendment thereto, the general nature, purpose and amount of such specific indebtedness.

2835. Method of Obtaining or Amending Charter Not Changed.—The two preceding sections shall not change the method of procuring a charter, or an amendment thereto, or affect the judicial discretion of the circuit judge in giving or withholding his approval.

2836. (2262.) Dissolution.—Any such corporation wishing to dissolve may present a petition to the circuit judge, who shall direct notice thereof to be published for such

time as he may judge to be expedient, and after the expiration of such time he may decree a dissolution and may make all necessary orders and decrees for the winding up of the affairs of such corporation, taking care that the claims of creditors be satisfied, as far as may be, out of the assets of the corporation.

2837. Incorporation of Social Club.—Any five or more persons wishing to form a social club or society not for profit may become incorporated in the manner prescribed by the general law for other bodies not organized for profit.

Such corporation shall have the inherent powers prescribed generally for all corporations by the general corporation law of this State.

The evidence as to any such corporation, the amendment of its charter and its dissolution shall be in accordance with the general laws as to corporations not organized for profit.

2838. Powers of Board of Directors.—Such corporation in its by-laws, among other powers and privileges, may delegate to the board of directors full discretionary power of admitting or expelling members; and may prescribe that an incorporator or member shall not have any vested right, interest or privileges of, in or to the assets, functions, affairs or franchises of the corporation, nor any right, interest or privileges which may be transferable or inheritable, or which shall continue after his membership ceases, or while he is not in good standing: Provided, That before his membership shall cease against his consent he shall be given an opportunity to be heard, unless he is absent from the county where such corporation is located; and may also delegate to the board of directors the power of fixing regular or special dues and of assessing fines in such sums as may be fixed or the limits and occasions determined by the by-laws, the amount whereof shall become, on and after notice, an indebtedness to the corporation, collectable by due course of law, and the failure to pay any indebtedness to the corporation shall render the member liable to expulsion.

2839. Proceedings to Annul Franchise, Etc.—In the event any member or citizen shall complain to the Attorney-General that any corporation organized under this chapter was organized or is being used as a cover to evade any of the laws against crime, or for purposes

inconsistent with those stated in the charter, and shall submit prima facie evidence to sustain such charge, together with sufficient money to cover court costs and expenses, it shall be the duty of the Attorney-General forthwith to institute and in due course to prosecute to final judgment such legal or equitable proceedings as may be considered advisable either to annul the franchise or prevent its improper use.

CHAPTER 5958.

AN ACT for the Organization, Management and Co-operation of Agricultural (Viticultural) and Horticultural Non-Profit Co-operative Associations.

Be It Enacted by the Legislature of the State of Florida:

Section 1. Three or more persons engaged in the production, preserving, drying, packing, shipping or marketing of agricultural (viticultural) or horticultural products, or (all) of them, may form a non-profit, co-operative association, under the provisions of this Act, to carry on said business, and such association shall have, and may exercise, the powers authorized by this Act and the powers necessarily incidental thereto, and all other powers granted to private corporations by the laws of this State, except such powers as are inconsistent with those granted by this Act.

Sec. 2. Such associations shall not have a capital stock, and its business shall not be carried on for profit. Any person, or any number of persons, in addition to the original incorporators, may become members of such association, upon such terms and conditions as to membership and subject to such rules and regulations as to their, and each of their, contract and other rights and liabilities between it and the member, as the said association shall provide in its by-laws. The association shall issue a certificate of membership to each member, but the said membership, or the said certificate thereof, shall not be assigned by a member to any other person, nor shall the assigns thereof be entitled to membership in the association or to any property rights or interest therein. Nor

shall a purchaser at execution sale, or any other person who may succeed, by operation of law or otherwise, to the property interests of a member be entitled to membership or become a member of the association by virtue of such transfer. The Board of Directors may, however, by motion duly adopted by it, consent to such assignment or transfer and to the acceptance of the assignee or transferee as a member of the association, but the association shall have the right, by its by-laws to provide for or against the transfer of membership and for or against the assignment of membership certificates, and also the terms and conditions upon which any such transfer or assignment shall be allowed.

Sec. 3. Each association formed under this Act must prepare and file articles of incorporation in the same manner and under the same regulations as now required by law for the incorporation of companies for profit in this State, and therein shall set forth:

1. The name of the association.
2. The purpose for which it is formed.
3. The place where its principal business will be transacted.
4. The term for which it is to exist, not exceeding fifty years.
5. The number of directors thereof, which must not be less than three and which may be any number in excess thereof; and the names and residences of those selected for the first year and until their successors shall have been elected and shall have accepted office.
6. Whether the voting power and the property rights and interest of each member shall be equal or unequal, and if unequal these articles shall set forth a general rule or rules applicable to all members by which the voting power and the property rights and interests, respectively, of each member may and shall be determined and fixed, but the association shall have power to admit new members, who shall be entitled to vote and to share in the property of the association with the old members, in accordance with such general rule. This provision of the articles of incorporation shall not be altered, amended or repealed except by the unanimous written consent or the vote of all the members.
7. Said articles must be subscribed by the original members and acknowledged by one of them before an officer authorized by the law of this State to take and

certify acknowledgements of deeds of conveyance, and shall be filed in accordance with the provisions of law, and when so filed the said articles of incorporation or certified copies thereof shall be received in all the courts of this State and other places as prima facie evidence of the facts contained therein.

Sec. 4. Each association incorporated under this Act must, within thirty days after its incorporation, adopt a code of by-laws for its government and management not inconsistent with the provisions of this law. A majority vote of the members or the written assent of members representing a majority of the votes, is necessary to adopt such by-laws. The provisions of the General Laws of this State not inconsistent with the provisions of this Act shall apply to the by-laws of the corporations provided for in this Act. Each association may also, by its by-laws adopted as aforesaid, provide for the following matters:

1. The manner of removal of any one or more of its directors, and for filling any and all vacancies in the Board of Directors.

2. The number of directors and the number of members or votes thereof constituting a quorum.

3. The conditions upon which, and the time when, membership of any member in the association shall cease; the mode, manner and effect of expulsion of a member, subject to the right of the expelled member to have the Board of Directors (equitably) appraise his property interests in the association and to affix the amount thereof in money, and to have the money paid to him within sixty days after such expulsion.

4. The amount of membership fee, if any, and the amount which each member shall be required to pay annually, or from time to time, if at all, to carry on the business of the association, and also the compensation, if any, to be paid by each member for any services rendered by the association to him, and the time of payment and the manner of collecting the same, and for forfeiture of the interest of the member in the association for non-payment of the same.

5. The number and qualifications of members of the association and the conditions precedent to membership, and the method, time and manner of permitting members to withdraw, and providing for the assignment and transfer of the interest of the member, and the manner of

determining the value of such interest, and providing for the purchase of such interest by the association upon the death, withdrawal or expulsion of a member or upon the forfeiture of his membership, at the option of the association.

6. Permitting members to vote by their proxies and determining the conditions, manner, form and effect thereof.

Sec. 5. Each association incorporated under this Act shall have the powers granted by the provisions of this law and other laws of Florida relating to private corporations, and shall also have the following powers:

1. To appoint such agents and officers as its business may require, and such appointed agents may be either persons or corporations; to admit persons to membership in the association, and to expel any member pursuant to the provisions of its by-laws; to forfeit the (membership) of any member for the violation of any agreement between him and the association, or for his violation of its by-laws.

2. To purchase or otherwise acquire, hold, own, sell and otherwise dispose of any and every kind or kinds of real and personal property necessary to carry on its business (and to acquire by purchase or otherwise the interest of any member in the property of the association).

3. Upon the written assent or by a vote of members representing two-thirds of the total votes of all members to co-operate with any other (co-operative) corporation or corporations for the co-operative and more economical carrying on of their respective business by consolidation, upon (resolution) adopted by its Board of Directors, to enter into all necessary and proper contracts and agreements, and to make all necessary and proper stipulations and arrangement with any other (co-operative) corporation or corporations, for the co-operative and more economical carrying on of its business, or any part or parts thereof; or any two or more (co-operative) corporations organized under this title, upon (resolutions) adopted by their respective Board of Directors, may for the purpose of more economically carrying on their respective business, by agreement between them, unite in employing and using, or several associations may separately employ, and use, the same methods, means and agencies for carrying on and conducting their respective businesses.

4. Any association formed or consolidated under this Act may be dissolved and its affairs wound up voluntarily by the written request of members representing two-thirds of the total votes, in the manner and with the effect now provided by law, except that the moneys remaining after liquidation shall be divided among the members in proportion to their property interest therein.

Sec. 6. The right of an association claiming to be organized and incorporated and carrying on its business under this Act to do and to continue its business, may be inquired into by quo warranto at the suit of the Attorney-General, but not otherwise.

Sec. 7. This Act shall take effect immediately upon its passage and approval by the Governor.

Approved June 8, 1909.

CHAPTER 7383—(No. 125).

AN ACT Authorizing Agricultural and Horticultural, Non-Profit, Co-Operative Associations to Own and Hold Stock in Corporations Under Certain Conditions.

Be It Enacted by the Legislature of the State of Florida:

Section 1. That any agricultural or horticultural non-profit, co-operative association, heretofore, or hereafter, organized under the laws of the State of Florida, may own or hold stock in any corporation organized under the laws of the State of Florida, if such corporation is organized, or conducts, or operates, its business, solely for the benefit or advancement of the interests of persons engaged in agricultural or horticultural pursuits in this State.

Sec. 2. All laws and parts of laws in conflict with the provisions of this Act be and the same are hereby repealed.

Sec. 3. This Act shall take effect immediately upon its passage and approval by the Governor, or upon its becoming a law without such approval.

Approved May 28, 1917.

CO-OPERATIVE MARKETING IN FLORIDA

By Dr. J. H. Ross,

President Florida Citrus Exchange

One of the outstanding features of the culture of citrus fruits in Florida during recent years has been the rapid growth and expansion of the co-operative marketing idea. The Florida Citrus Exchange was formed something more than eleven years ago. It came to meet the necessities of the citrus growers at that time. Conditions in the Florida citrus area had reached a point where they were unbearable to growers. Competitive selling often produced conditions where growers were compelled to accept prices which did not cover their costs of production. On the other hand, perhaps twenty speculators at that time popularly were supposed to reap benefits from their price manipulations which in the few months of their shipping season gave them profits in excess of the net returns to all the growers for their year's work.

Whether or not speculative profits were as great as popularly supposed, it was undeniably true that the business of producing oranges and grapefruit had become extremely hazardous because of market conditions, over which the growers found it impossible to exercise control.

Following a number of meetings and much discussion of the subject, a party of some fifty progressive citrus growers journeyed in a body to California and made careful study of conditions there. They found California growers had obtained the answer to the many problems which were perplexing the growers of Florida through the operation of the growers' own marketing agency—the California Fruit Growers' Exchange. This had been launched some fifteen years before and was functioning most successfully. After discussion it was decided by the Florida representatives to adopt outright this co-operative plan which had proven itself in California.

Upon the return of this party of growers to Florida, meetings were held, and shortly the Florida Citrus Ex-

change was launched at a great meeting of growers held in the Tampa Bay Casino at Tampa.

For something more than eleven years this co-operative organization, through which growers aim to perform for themselves at cost those marketing operations which speculators had performed for them, and for which an excessive tax had been paid, steadily and gradually has grown in membership, and in volume of fruit handled, until upon the occasion of its tenth birthday its packing



Delivering Fruit to the Consumer. Citrus Exchange

houses literally dotted the citrus area of the peninsula. It would seem, however, as if this first ten years in the life of the co-operative organization in a way represented a period of trial. That is, many growers had not come to accept fully the success of the co-operative marketing idea in Florida until the organization passed the mile-

stone of its tenth anniversary. Wide publicity naturally was accorded to the celebration of this event, which was held in Lakeland, and apparently many growers who hitherto had felt co-operative marketing could not succeed in Florida suddenly awoke to the fact that the success of the idea had ample proof in the substantial success from the ten years' experience of the Florida Citrus Exchange. Time passes quickly, and many enthusiastic members of the co-operative movement doubtless were astonished to find it was ten years old in Florida. Then, too, these ten years were years of successful achievement for the growers who marketed their fruit co-operatively. During this time the organization had grown to include something like 4,000 members, while its sales department had been perfected to cover every Northern market of any importance and so constructed that it was capable of disposing of the fruit of the growers successfully and satisfactorily.

Through its years of continued and successful operation the Florida Citrus Exchange had become financially responsible and occupied an enviable place in public opinion. In the light of later events it would seem as if the celebration of the tenth anniversary of the founding of the organization was the one thing which best could focus attention upon it. It is to be recorded that the satisfactory, if slow, growth of the organization up to that time has since been replaced by a rapidity of expansion, which has required the best organizing genius of its executive officers in order to care for its increasing volume of business.

The beginning of the 1919-1920 shipping season finds the ranks of the Florida Citrus Exchange augmented by more than a dozen new local associations representing that many new communities which within a short period of time have determined to adopt the co-operative idea. In this they doubtless have been aided by the study of those other communities where the co-operative marketing idea has prevailed since its inception in Florida. It is a noteworthy fact that those citrus communities which for years have been served by local associations and packing houses of the Florida Citrus Exchange have become the outstanding leaders in South Florida's prosperity and progress. For this there is abundant reason. The Florida Citrus Exchange is essentially and entirely an organization of, for and by the citrus growers. It has no capital stock, no initiation fees, and no membership

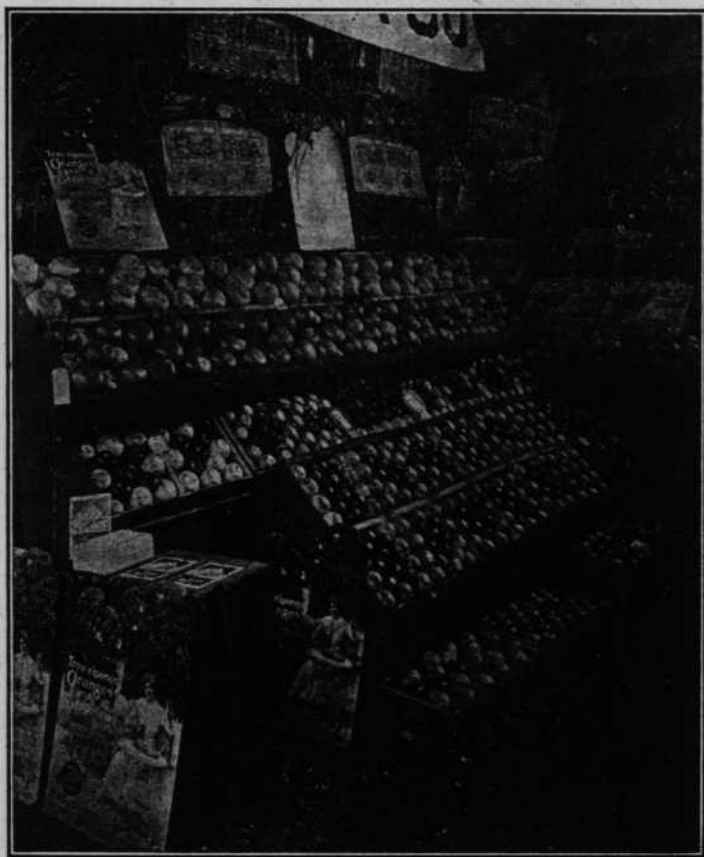


Packing House Scene. Citrus Exchange.

dues. Its purpose is to enable the marketing of the crops of its members to the best possible advantage and at actual cost. Fruit of the growers is sold in the market in a manner to realize its full worth and all that the crop brings is returned to the growers, saving only the actual costs of handling the operation which are deducted. Due to considerably increased volumes of fruit handled, the selling costs of the organization are showing corresponding reductions. There is not one cent of profit in the operations of the Florida Citrus Exchange for any one save its members. The organization maintains no treasurer, and all in excess of the cost of its operations is returned promptly to the various sub-exchanges, which, in turn, pass it along to the local associations and thus to the growers, who themselves are the foundation of the co-operative idea.

In addition to its other valuable functions, the Florida Citrus Exchange within recent years has contributed largely toward obtaining new and greater markets for the oranges and grapefruit of Florida. Through its advertising of its own "Sealdsweet" trademarked fruit, it has taught hundreds of thousands of Northern consumers to discriminate in favor of good fruit. Through advertising and special merchandising effort hundreds of thousands also have been taught to eat and to relish Florida's most delectable grapefruit. That by these efforts the public's consumption of grapefruit has kept pace with the rapidly growing production of Florida grapefruit groves has been no inconsiderable achievement. Both oranges and grapefruit under the "Sealdsweet" trade name of the Florida Citrus Exchange today are accepted in all the leading markets as typifying the best and most reliable in citrus fruits. The fruit jobbing trade, which once upon a time was disposed to look askance at any fruit product coming out of Florida because of its unreliability and lack of standardization, has come to accept Sealdsweet oranges and grapefruit as representing the highest type of honest goods and carefully standardized grade and pack.

Three and sixty-five hundredths per cent was the cost of selling during the season of 1919-1920 for the growers who marketed their fruit co-operatively through the Florida Citrus Exchange.



Display of Exchange Fruit. Citrus Exchange.

CITRUS SUPPLY COMPANY.

One additional reason for the expansion in membership of the Florida Citrus Exchange is to be found in the successful operation of the Exchange Supply Company, which came into being three years ago. Because of the nature of their products citrus growers always of necessity have been wholesale sellers of the fruit they produced. The Exchange Supply Company was organized by the members of the Florida Citrus Exchange to enable citrus growers to become also wholesale purchasers of those things necessary to the operation of their business. From a very modest beginning the Exchange Supply Company has come to be one of the largest businesses in the state of Florida within this short period. The savings it has been able to accomplish for those who made their purchases through it have exceeded the most hopeful anticipations of its founders. Within three years of its initial venture it has already reached a point where its annual business runs into the millions. Yet this has been accomplished without disturbing the business fabric of the section it serves. This has been possible only because this company bills goods to the purchasers at normal prevailing retail prices. In this way it avoids a disturbance of local markets, yet all which in an ordinary commercial sense would be profit shortly is returned to the purchasers in the form of refunds. The refunds are proportioned to the amount and character of the purchases made and thus the business of purchasing is made as truly co-operative as is the selling of fruit in the markets by the Florida Citrus Exchange. The Exchange Supply Company is conducted most economically for the service it renders. At no time has its cost of operation exceeded $3\frac{1}{2}\%$, and that of the last year showed a worthwhile decrease below this figure. The success of the Exchange Supply Company essentially is the success of the Florida Citrus Exchange because this great purchasing organization serves only members of the Florida Citrus Exchange.

To those growers who make all their purchases through it, the Exchange Supply Company is capable of returning rebates upon purchases of grove and other supplies more than sufficient to offset the entire cost of marketing their crop through the Florida Citrus Exchange.

"During the season the exchange handled a total of 3,770,511 boxes of fruit, which was 59.3 per cent more than in any other year, and a volume of cash amounting to \$13,757,000. There are no bad accounts, and no fruit sold that was not collected for, which in itself is some record. We wonder how many independent fruit growers there are who can score 100 per cent in the collection of their accounts. The cost of doing business for the year amounted to .092c. per box, which is a reduction of .013c. over the average cost for last year.



Grapefruit Grove on Reclaimed Prairie Land in St. Lucie County.

"The result of the work that is being done by the Florida Citrus Exchange in the successful marketing of the citrus fruits of Florida should not only stimulate membership in the exchange in Florida, but encourage co-operative associations in other states. Producing and selling fruit are distinctly different occupations. When fruit can be sold through a co-operative association as the Florida Citrus Exchange, or any of the other good associations in other states, we doubt the advantage of a grower trying to sell his own fruit."—American Fruit Grower.

MARKETING PROBLEMS

*Address of L. M. Rhodes, State Market Commissioner, at
Annual Meeting of State Marketing Officials,
Chicago, Nov. 30, 1920.*

Mr. Chairman, Ladies and Gentlemen:

The people of the earth eat 650,000,000 tons of food and cannot be comfortably clothed with less than 160,000,000,000 yards of fabric per annum. To feed the livestock and poultry and furnish the fabric for all other purposes would require five times as much, and 97 per cent of all this vast amount of vital necessities comes from the farm. So long as this planet swings through space, bearing its teeming millions of consumers or their journey from the cradle to the grave, with a stop-over at a meal station three times a day, marketing agricultural products and buying farm supplies will be the paramount source of the world's commerce and trade.

To attempt to discuss a question of such magnitude in so short a time puts me in the attitude of the young preacher who forgot where his text was found. He said, "It is in Genesis." "No, no," he said, "it is in Revelations." "Well," said he, "I can't find it, but I can quote it. 'I am come to cast out the sick, heal the dead and raise the devil.'"

The success of agriculture is a universal blessing. The failure of the farmer is an international tragedy. The problem of marketing crops is one of great importance, equally as momentous as growing them, perhaps more. Marketing is to agriculture what steam or gasoline is to the engine, or blood is to the human body. It is worse than folly for an industry that performs more than 3,000,000,000 days of work annually; produces more than 50,000 carloads of products daily; plows 360,000,000 acres; slaughters 100,000,000 head of livestock, feeds 225,000,000 farm animals and 600,000,000 head of poultry; sells \$10,000,000,000 worth of products and buys \$6,000,000,000 worth of farm supplies per annum—an agricultural transaction amounting to \$2,000,000 every hour—furnishes one-half of all our exports to foreign countries; places before a hungry world a carload of food every four seconds and supplies material for 4,000 yards of cloth every time your heart beats, to not be vitally interested in the problems

of marketing, especially when experts claim that the farmers of the United States lose \$10,000,000 a day in marketing their crops.

There are so many toll gates between the producer and consumer and so much waste and loss between the field and the factory that one is reminded of the story of the sausage factory that advertised and sold rabbit sausage. A customer was so pleased with the quality of the sausage that he made a trip to the factory to buy a few cases. While he was writing a check to pay for his purchase, he looked out the window and saw a truck with two dead mules on it. He said to the proprietor, "Do you put any other meat in this sausage except rabbit?" "Yes, we do." "What kind? You don't put mule meat in it, do you?" "Oh, yes, we put mule meat in it." "How do you mix it?" "Fifty-fifty; one mule and one rabbit." The farmer gets the rabbit, the other fellow gets the mule.

This is because the farmer has not been educated in distribution as he has in production; because he has not been taught to regulate the crop to the market as well as to regulate the seed to the soil; because he has not been taught to eliminate the grafter and parasite as well as he has to use fertilizer and dynamite; because he has been taught to get rid of the army worm, Hessian fly and chinch bug instead of the humbug; because he has been taught to dip the cattle ticks and not dodge the speculators' tricks; and because he has been taught to exterminate the boll weevil, but not the toll weevil.

This country sells food and feed both in raw and finished products to the amount of \$30,000,000,000 per annum. If they were all silver dollars, they would lay a solid silver walk three feet wide around the earth. Most of this raw material comes from the soil. In fact, the farmer has charge of the world's commissary and wardrobe. Yet he has been selling at wholesale and buying at retail so long he has become commercially blind, is an expert in the art of submission, has taken 33 degrees in financial suckerdome, and is the most patient pack-horse on earth. He has allowed his hide to be taken off to pad the purse of sagacious traders, has been mesmerized and hypnotized by the admonition to grow two blades, pounds or bushels where one grew and given no thought to marketing the one blade, pound or bushel at a profit before he grew two.

No service more valuable can be performed on behalf of the consumer than to encourage production, but production cannot be regularly and permanently increased unless the producers make a profit. Nothing could be more destructive to the welfare and prosperity of the general public than to permit a policy that refuses a fair reward to the farmer for his efforts, and there is no law, human or divine, that requires the farmer to feed and clothe the rest of the human family unless it is profitable to do so.

Principles are eternal; men come and go, crops fail; methods change. In short, nearly everything connected with the marketing of produce is variable and changeable. Indeed it is a game, but the principles of equity and justice are immutable.

The world's experience has shown that, as a rule, the most effective way for farmers to get the largest share of the consumer's dollar is through co-operative marketing. If the farmers of the United States marketed their crops with as much efficiency and as little expense as the farmers of Denmark do through their co-operative marketing associations, they would save \$2,800,000,000 per annum, or an average of \$430 each for every farm more than they do. Our primitive, wasteful, inefficient methods of marketing makes many of our farmers feel like the poor fellow who attended a meeting at church for married men only. At the highest pitch of the preacher's enthusiasm, he exclaimed, "All you husbands who have trouble at home stand up!" With one accord they all arose except one pitiful looking fellow near the door. The preacher looked at him and said, "You are one among a million," he said. "No, I'm not; I have just as much trouble as anybody, but I'm paralyzed." Unprofitable markets will sap the vitals of agriculture and put the farmer on financial crutches almost in one season. Unprofitable markets discourage production, cause the farmer to neglect his soil and abandon his farm. They will lessen his energy, eliminate his bank account, destroy his credit, place him under mortgage, often make him a tenant and occasionally send him to the poor house. Marketing then is an important question which we cannot consider lightly. It has such enormous scope that to discuss it we can have the earth as our arena and the people

of the world as our audience, for it reaches every nook and corner inhabited by men and touches in some way every man, woman and child this side of heaven.

MARKETING BUREAUS

Marketing bureaus were established to study marketing problems; to give marketing information; to help eliminate marketing difficulties; to teach correct methods of grading and packing; to keep records of crop production, cold storage and warehouse supplies, helping producers to know how to regulate the planting of crops; to give the financial standing, commercial rating and business reliability of buyers of farm products; to issue bulletins, giving general marketing news and for sale want and exchange bulletins, putting all growers in touch with each other so they can exchange, sell and buy, wish, to and from each other such products as seeds, farm implements, livestock, poultry, etc; to find markets for any and all products when called on to do so and give quotations on, and help locate farm supplies for the buyer of such articles, from a parcel post package to a train or boat load; and to do everything possible to shorten the distance and lessen the number of toll gates between the producer and consumer. The Florida State Market Bureau has done all this and more. It has done more than \$20,000,000 worth of business in three and one-half years. It has found markets for over 200 different kinds of products, and has furnished bulletins, market papers and information about Florida to people in every state in the Union and to a score of foreign countries. It has increased its operations a hundred fold and its volume of business 2,000 per cent.

It is quality, not quantity, that counts most. A small amount of select stuff is often worth more than a whole cargo of rubbish. There is never a monopoly in quality—there may be in quantity. The market bureau has tried to improve quality and eliminate waste. Experts tell us that 50 per cent of the perishable products produced in this country go to waste. As an example, in 1918, 120,000,000 dozen eggs and 128,600,000 pounds of poultry were dumped on account of poor care in marketing, causing a loss of \$75,000,000 worth of the best food on earth. On all products there is, according to expert authority,

an annual loss of approximately \$3,000,000,000 in marketing farm products in the United States, enough to maintain 2,000 first class State Market Bureaus in every State in the Union with an annual appropriation of \$30,000 each.

DO FARMERS EVER STRIKE?

There has been a great deal said in the press about an agricultural strike, and yet all intelligent men know that the farmers do not strike, never order a walk out, and to publish such piffle is a gross injustice to the men who feed the world. The resolutions passed by the National Farmers' Union, representing more producers than any other convention in the United States, which have been given to the public as indicative that the farmers would strike, were in substance: "We serve notice on the world that unless the conditions under which our products are sold are reformed in such a way that our market prices shall at least equal the cost of our commodities, the inevitable result will be a reduction of production. And we urge all farmers to withhold this year's production from the market until prices are restored to a profit-making level."

In an address before the American Bankers' Association, October 19th, 1920, Secretary of Agriculture said that taking all crops, the farmers of the United States were facing a shrinkage in prices of \$2,500,000,000, or 17 per cent. When you add the loss in prices of livestock it will amount to at least \$4,000,000,000, which is 27 per cent, or \$613 per farm. Many claim much more, although the 1920 crop shows an increase in production of 6 per cent over the 1919 crop. Yet when the farmer says he cannot continue in business at a loss of 27 per cent or \$4,000,000,000 per annum he is charged as a striker. If you offer the hundreds of thousands of publishing companies in this country 27 per cent less than cost to publish their papers, they would immediately, as good business men, refuse to operate. Would that be wrong? Would that be a strike?

If you should offer the transportation companies 73 cents on the dollar to serve you and they should refuse, which they certainly would do, would that be a strike? If you ask the manufacturer to sell you an article at a reduction of 27 per cent below cost price, they would

promptly deny your request and keep the article. Why doesn't some one accuse them of being on a strike? Hogs are worth on market 8 to 10 cents; it costs the farmer 15 to 20 cents to grow them. If he demands even the cost of production, he is accused of striking. But the packing houses, wholesalers and retailers can hold meat up to a profit basis and charge the consumer any price, and if he refuses to pay it he can go hungry and they hold the product; yet no one publishes in box-car letters that they are on a strike. Hides are so low it hardly pays to skin an animal, but if you offer a shoe store \$5 for an \$8 pair of shoes, he goes on a temporary strike, puts them back on the shelf and waits for a customer that will pay cost with a profit. I am an American; so are you. God forbid that we should ever depart from one single American principle.

This republic was builded on the sacred and time-honored foundation of equal rights to all and special privileges to none. The farm organizations of this country have for their motto: Equity, Justice and the Golden Rule; they believe in fair play. They have performed their duty well in both times of war and peace, but agriculture cannot endure operating at a loss. There are only two things that can destroy agriculture and starve humanity: One is to destroy soil fertility; the other is, to deny farmers a fair profit. The farmers are organizing as never before. They will not be satisfied with a stone when they ask for bread, nor with a serpent when they beg for fish, and with the balance of power at the American ballot box, woe unto the politician that gives them an unfair deal. If the farmer is a striker when he refuses to sell at a loss, then every business man and member of a profession in this country is a striker. Knowing that permanent agriculture depends on profitable markets for farm products and the food supply of humanity is dependent on permanent agriculture, I hope everything possible will be done to encourage production, improve distribution and foster marketing. These are the most important questions before the world, and in the name of every noble impulse of the human heart, and for the sake of the future of the grandest republic beneath the stars, I beg you to help solve them.

THE STATE MARKETING BUREAU

BY L. M. RHODES,

State Market Commissioner.

One of the many advantages enjoyed by the agricultural, trucking, horticultural and livestock producers of the state is the Florida State Marketing Bureau, with headquarters in Jacksonville.

Proper marketing is the greatest problem of commercial agriculture and affects producer and consumer alike.

The value of the services of the State Marketing Bureau in both a financial and educational way can hardly be estimated. More than 200 different kinds of products have been bought and sold through the Bureau.

Since July 1st, 1917, the Bureau has found markets for products offered for sale by producers, secured prices on farm supplies for interested purchasers, bought, sold or exchanged, directly or indirectly, for associations and individuals, products and articles amounting to approximately \$20,000,000, saving the patrons of the Bureau hundreds of thousands of dollars.

The "For Sale, Want and Exchange Bulletin" issued by the Bureau and sent out to thousands of farmers putting them in touch with each other so they can buy, sell or exchange livestock, farm machinery, seeds and feeds, etc., is worth more to the farmers than the entire cost of the Bureau.

The Bureau has published in press articles from time to time information pointing out the great agricultural and horticultural advantages of Florida and about marketing her products that have been widely circulated and read.

The Bureau has published numerous bulletins about the State of Florida that have been called for by libraries all over the country, Asia, Europe, and Australia, and have been reprinted in many of the journals and newspapers of this country and Canada.

The purchase and sale of pure-bred livestock and poultry has been made a specialty of the Bureau. Pure seed and good feed have also been secured for farmers by the Bureau in all parts of the State.

The Bureau has adjusted and collected accounts for Florida shippers amounting to many thousands of dollars.

It has published reports and statistics regarding the production of Florida and the amount of products shipped out of the State and sent them to interested parties all over Florida and in practically every State in the Union. Perhaps nothing ever established by the State has developed with such remarkable strides as has the Florida State Marketing Bureau.

No institution of the state handles so large a volume of business on so small an outlay of expense, and all the profits and benefits go to the patrons, who are economic benefactors of the state by reducing cost of distribution.

No state in the Union is in position to use a marketing bureau to greater advantage than Florida.

The Bureau is ready at all times to give the shipper on request the financial rating and reliability of produce houses and business firms who buy Florida products.

By answering inquiries from home seekers in various parts of the United States the Bureau has located a number of enterprising farmers in the state.

The Bureau has built up quite a system of parcel-post marketing which has enabled the consumer to buy fresh products direct from the producer.

It has saved thousands of dollars to farmers by finding markets for perishable stuff which would have remained in the field, grove or garden and rotted had each grower been left to his own resources to locate a market.

It has saved thousands of dollars by aiding shippers to avoid shipping to unreliable parties.

It has saved thousands of dollars by placing cars in the best markets.

It has kept shippers in close touch with available markets, preventing them from shipping blindly, without full market information. It has given grading, packing and shipping instructions to growers daily.

The Bureau is no longer an experiment. It has proven its worth and it is an agricultural and commercial necessity.

Florida ships annually 80,000 cars of vegetables, fruit, field crops and livestock. It exports and imports \$150,000,000 worth of food, feed, farm supplies and farm, garden, grove and livestock products.

If by a faulty system of buying and selling or a poor system of grading and packing we lose even one per cent we have lost \$1,500,000 per annum, or one hundred times as much as the Bureau has cost per annum, or if the Bureau can help the producer save this one per cent it will be saving one hundred times its cost.

The Bureau is maintained by a fund derived from the sale of fertilizer stamps, and is not a tax on the general public. It comes indirectly from the farmer.

Thirty-two states have established marketing bureaus, some of them appropriate as much as \$60,000 per annum to maintain them.

The demand for State Marketing Bureaus is constantly increasing. A dozen or more states are expecting to establish them at the next session of their Legislatures. Many of the states will increase their appropriations to meet the growing demand for marketing service. At the meeting of State Market Officials at Chicago November 29-30, 1920, it was strongly urged that every state establish a State Market Bureau in order that each state could co-operate in the adjusting of accounts, inspection of shipments, location of markets, etc.

The Florida Marketing Bureau has increased its volume of business 2,000 per cent in the past two and one-half years. It is just beginning to show its possibilities. The Bureau finds markets for products in any quantity from a parcel-post package to a train load.

Marketing is to agriculture what the blood is to the human body. It is as old as history and broad as the earth. It touches every nation, kindred, tongue, people, tribe and individual—from the beggar to the king, from the garret to the throne. From the time we are wrapped in our first swaddling clothes until we cross the dim river we are constant patrons of the market.

Within the next ten years the farm, grove, truck, poultry and livestock products shipped out of Florida will amount to not less than \$1,000,000,000. The amount of loss and waste in the selling of this vast amount of products will be governed largely by the methods of marketing practiced by the farmers. The Marketing Bureau stands ready to render every service possible in the distribution of Florida products, and is a step in the right direction. With support and development it will be a great benefactor to the State.

CO-OPERATIVE MARKETING OF PECANS

By WILLIAM P. BULLARD, *President National Pecan Growers' Exchange, Before the Southern Settlement and Development Organization, Maltimore, Md.*

There are two classes of pecans, viz: seedlings or wild and unbudded trees; and the budded or grafted varieties called the papershell. Our budded and grafted varieties have originated by selecting from the thousands of seedling trees a fine nut from every standpoint which includes comparative thinness of shell, good color of kernel, plumpness or well filled qualities of the kernel, flavor and size. These are the main points that make up the profitable and commercial nuts, and to that should be added prolificacy or regularity, uniformity and comparatively large yields. When all these factors were found to exist in a wild or seedling nut, it was budded into seedling stock and given a variety name. Budded or grafted trees come true to variety, while seedlings seedlings seldom do any more than a seedling peach or apple or other fruit.

Budding and grafting began about twenty years ago in a small way but started in a rather large way some twelve years ago and now no reputable nursery will sell seedling trees for the reason that they are likely to produce small nuts, not bear early and be very indifferent bearers, and consequently an unprofitable commercial venture. It has been found unprofitable to plant seedling trees where they are wanted to grow and then bud them into good varieties. Also found unprofitable to plant the nut where the tree is intended to grow and then bud it later on, as it takes too long in this way to produce a bearing grove and the grove is unsymmetrical in appearance. Some of the large commercial companies tried planting nuts and then budding them in place in the field but it proved decidedly unprofitable. It is therefore, highly desirable for a planter to buy budded or grafted varieties from a reliable nursery just the same as it is desirable to buy budded trees when you want to plant peaches, apples, or anything else.

I want to emphasize the desirability of buying from nurseries of known integrity and reliability. There are many nursery tree agents throughout the country selling pecan trees along with fruit trees, and the planter should have a care in buying pecan trees from such sources. I per-

sonally know of instances where varieties have been sold and other varieties substituted, although tagged with the variety the planter supposed he was buying. I fear this practice has been very extensive with the result that growers, and especially little growers, have planted pecan trees not true to name. When their trees come into bearing there will be trouble along the marketing end, because the grower will think he has this or that variety simply because he bought them from the agent and he supposed he had them.

Right at this point I have been interrupted in my dictation by a grower coming in my office and telling about his own experience. About eight or nine years ago he bought 300 pecan trees, as follows: 100 Stuart, 100 Schley and 100 Frotcher. The trees came tagged according to this schedule but after coming into bearing he found that Stuart was the only one he had true to name, the other 200 trees being inferior varieties, and I have just this moment advised him to have those 200 trees top-worked into good varieties that are always salable. Here is a concrete instance of the danger in buying from the traveling agent and I trust you gentlemen will exert every effort to discourage such promiscuous buying. It takes a long time to grow a pecan tree and it is discouraging after the lapse of several years to find that you have been nurturing a tree of inferior nuts; in other words, to find that you have been swindled.

Up to this time the large papershell has not been produced in heavy quantities and naturally there has been an easy marketing outlet, but when I tell you there are planted a million or more pecan trees in the United States every year, you will realize that the time is coming in a few years when pecans will not be marketed profitably unless sold through some centralized co-operative organization like the National Pecan Growers' Exchange.

I could give you many instances of the flooding and consequent demoralization of pecan markets by growers selling promiscuously but one instance of this past year will suffice, as follows: This last fall we sold a large quantity of pecans in Atlanta to the jobbing trade through the brokers at 50 cents f. o. b. Albany. Long before the holidays little growers over the State began shipping nuts on their individual account to Atlanta to dealers on consignment. In some instances the first knowledge the deal-

er would have of the transaction would be a notice from the grower that he had shipped some pecans and wanted the dealer to do the best he could with them. The result was a complete demoralization of the nut business in Atlanta and the jobbers who bought our nuts could not resell them and after the holidays, rather than carry them over until fall in storage, resold them at an actual loss of almost 14 cents per pound. These same jobbers will hesitate to buy pecans another year. If these little growers had given their nuts to us to sell, we would have shipped them to other markets and stabilized and maintained prices. I could not give you a better practical illustration of the advantages and necessity of co-operative marketing than the Atlanta case, which was an actual happening; and the same thing has happened in many other places this year. Last November a jobber in Philadelphia reported that he had bought "Extra Fancy Florida pecans" at a price that he could resell them at 35 cents and make a good profit; and we were trying to sell pecans in the same market at 50 cents f. o. b. shipping point.

This last season a grower shipped a thousand pounds of fine nuts to a speculator C. O. D. The goods were promptly turned down because the speculator wanted to get hold of them without paying, but the grower reshipped the nuts to us and soon got his money. Some would-be enterprising growers sold in Macon, Ga., 3,500 pounds of fine pecans in the fall, shipping them sight draft attached B/L. The shipment was turned down and the shippers were requested to release and grant 30 days time. The shippers naturally refused to release the goods and turned the over to us. We disposed of them to the entire satisfaction of the growers. These two actual cases illustrate the danger of growers shipping to parties of unknown reliability.

Our goods are sold to the wholesale jobbing trade through established brokerage houses in the trade centers. We pay brokerages of 5% and ship only C. O. D., if by express or sight draft attached B/L, if by freight. We do not grant trade discounts and neither do we take chances on the buyer.

Our prices are named about October 1st, at which time we invite to meet with us every grower who will give us nuts to sell, thus giving every grower, large or small, an opportunity to help determine the prices at which pecans

should be marketed for the season. In other words, under our system of co-operative marketing, the growers themselves name prices; while under speculative buying it is the speculator or middleman who names prices.

Co-operative marketing accomplishes several things vital to growers, viz:

1. Concentrating through one channel the large volume of goods that otherwise would have been offered through many hands. One hundred thousand pounds of nuts offered by ten men might ruin a market, while if offered through one source, better prices and stabilizing of the market would result.

2. Wider distribution or the opening up of new markets and not flooding any one place.

3. Elimination of the speculators' or middlemen's profit, which is given back to the grower where it rightfully belongs.

4. Stabilization of the pecan market. Jobbers now well know the benefits to them of a well organized and strong co-operative marketing association and will patronize such an agency rather than otherwise.

This last point was illustrated by a jobber a few days ago who said he liked to deal with a strong co-operative agency because he knew it meant uniform prices and consequently his competing jobbers would have to pay the same prices for the same grade of goods that he did; but when there were lots of individuals offering to sell, it put him at once in competition with his brother jobber as to which could buy the cheapest, the result being that he would buy as sparingly as his immediate needs from time to time justified; but with a strong co-operative organization in the field he felt justified in buying his year's supply at one time knowing that tomorrow some one would not be offering him the same goods at a lower price than he paid today. In other words, co-operative marketing means stability and assurance to the jobber, the broker, the grower, the consumer.

SOILS AND FERTILIZERS

By T. J. BROOKS, Chief Clerk, Department of Agriculture

Physical man is made up of some fifteen of the eighty known elements composing the material universe.

Man's existence is dependent upon his ability to make the soil yield him a sustenance.

Soils are made up of small particles of different kinds of minerals mixed with more or less organic matter. All geologists tell us that these small mineral particles were originally formed by the breaking down of rocks through glacial erosion, weathering, and decomposition. The mineral kingdom is the basis of the vegetable and animal kingdoms. Plants and animals are partly mineral—man is no exception.

So far, science has been able to isolate eighty distinct physical elements. At least, ten of these are essential to the growth of plant life, carbon, hydrogen, oxygen, magnesium, iron, sulphur, calcium, nitrogen, phosphorus, and potassium.

The elements taken entirely from the soil are, calcium, iron, magnesium, phosphorus, potassium, and sulphur.

Nitrogen is taken chiefly from the soil, but a group of plants known as legumes—such as clover, peas, beans, vetches, cow-peas, alfalfas, etc., gather part of their nitrogen from the atmosphere. They accomplish this by means of microscopic organisms which live in small nodules or tubercles found on the roots.

Combinations of the three elements, Carbon, Hydrogen, and Oxygen constitute 95% of all plants. They form the fats and carbonhydrates including the oils and starch. Plants obtain their supply of these from the air and water. The Carbon is derived from the carbon dioxid gas of the air, and the Hydrogen and Oxygen from water, which is itself a combination of Hydrogen and Oxygen, absorbed through the roots.

So that only about five per cent of the material of plants actually comes from the soil. Only minute amounts of magnesium, iron, and sulphur are required and they are present in most soils in abundant quantities. The same is usually true of calcium, although certain crops, particularly clover, require this element in considerable amounts. So, by process of elimination, we find that

seven of the ten elements essential to plant growth, need give the farmer but little concern.

The efficiency of soil is measured by its capacity to supply plants with the several materials and conditions they require for growth: these include physical support, water, heat, air and food. These elements of healthy plant environment must exist in well-balanced proportion and abundance to insure bountiful yields—even from the best of cultivation and the absence of diseases and insect, or animal enemies. The vast variety of climates, soils, and soil conditions determine the location of the many varieties of plants.

Generally speaking, the water, heat, and air are furnished by nature. It also furnishes the food in great measure, but of recent years a great deal of artificial feeding of plants has been practised by farmers. This gives rise to the manufacture and use of fertilizers.

Nitrogen, phosphorus, and potassium are three elements, which in their various combinations, constitute the vast majority of the material obtained from the soil by plants. These elements do not exist in the soil as single elements, but are found combined with other elements, and plants can only appropriate their foods when they exist in certain combinations, and under certain physical conditions.

No chemical analysis of either the soil or the plant will show dependably and accurately just the combination of ingredients which should be used. Soil analysis shows the chemical content, but does not show conclusively the availability of plant foods. The mechanical condition, which cannot be ascertained by chemistry, goes farther in determining the fertilizer needed, than the actual plant food taken up by the growing plant. It is also true that a crop test is the only absolutely reliable means of determining the availability of plant food in fertilizers, as that availability is largely determined by the physical or mechanical condition of the soil.

The discovery that the kind and amount of fertilizer which should be used on a certain soil to insure the best result from a certain crop can be ascertained only by actual test in growing it, was a sore disappointment to agronomists, and is disconcerting to the farmer.

There are several methods used in determining the availability of plant foods in fertilizers; the neutral permanganate method, and the pepsin hydrochloric acid method

are used to determine the availability of plant foods, and they differ so widely that 65% as shown by the latter is equal to 85% as shown by the former. The Kjeldahl method is also used to ascertain the nitrogen content of ingredients, making up a compound fertilizer, but the availability for plant food of the elements contained is not so easily registered.

All the power of growth possessed by plant life is dependent upon the presence and availability of the plant foods with which the rootlets come in contact.

One food cannot take the place of another. No amount of preparation, seed selection, or cultivation will produce a crop when the proper plant foods are not in the soil. If two are there in superabundance, and the third totally absent, the labor is lost. We fertilize when we apply either ammonia, phosphoric acid, or potash in an available form. A complete fertilizer must contain all three, but not necessarily in equal parts. The food that is present in least amounts limits the crop. Plants need a "balanced ration" the same as animals.

Plant food is drawn in through the tiny, hair-like, fibrous rootlets. Each of these fibrous feeders is covered with a thin skin. All the food plants get must pass through this skin. The process is very much like that of body-building from digested food in the stomach and alimentary canal of animals—including human beings. The villi of the digestive tract are analogous to the root fibers that take up the soil water which holds in solution the dissolved plant food elements. The fuzz on the roots has no perceptible openings through which the finest powdered dust could get through. Plant food which will dissolve so as to go with the water through the skin of these tiny roots is called soluble, and is therefore available for plant nourishment. The plant food thus drawn in by the fibrous rootlets passes up through the roots, the trunk, stalk or stem, then the branches and out into the leaves or blades where most of the water is evaporated, transpired, or breathed off into the air. A process of exchange, of transpiring, and absorption takes place in the foliage—much like the process which takes place in the lungs of animals that breathe out carbonic acid gas and take in oxygen. The sap of plants is elaborated in the foliage by this exchange of moisture drawn up from the ground, and the taking in of gases from the air. After

this "elaboration," the sap *flows back* to build up the plant and its fruit—just as blood flows back from the lungs, where it is surcharged with oxygen, to the heart, and thence through the arteries to the capillaries in all parts of the body where assimilation or body-building takes place.

Plants exposed to light develop chlorophyl, which is the coloring matter that gives the shades to certain portions of the protoplasm. The function of chlorophyl consists of the absorption of carbon-dioxid gas, resulting in the transformation of oxygen and the formation of new organic substance.

A plant food is much more available when locked up in some mediums than in others. Certain sources of nitrogen yield it up to the action of soil moisture more readily than others. This makes the source of nitrogen, phosphorus, or potash of importance to the farmer, who may want either rapid or gradual solubility to suit a quick, or slow-growing crop.

SOURCES AND FUNCTIONS OF FERTILIZER ELEMENTS

(Nitrogen.)

The common sources of commercial nitrogen are:

	Nitrogen. Equivalent to ammonia.			
Nitrate of Soda....	15	to 16	18	to 19½
Nitrate of Ammo....	19	to 22	23	to 26
Dried Blood	10	to 14	12	to 17
Tankage.....	5	to 9	6	to 11
Fish Scrap	7	to 8	8½	to 9½
Cottonseed M.....	6½	to 7½	7½	to 9
Castor Pomace.....	5	to 6	6	to 7
Nitrate of Lime.				
Horn and Hoof M.				
Hair and Wool.				
Leather Scrap.				
Peat.				
Tobacco Stems.				
Air.				

Pure nitrogen is a gas that has no smell, color, or taste. There is plenty of it in the air, but leguminous

plants are the only ones that can extract it from the air and store it in the soil. Modern science enables man to take it out of the air by power process. Ammonia is a compound of fourteen parts of nitrogen, by weight, combined with three parts of weight by hydrogen. The Federal Government has a large plant for extracting nitrogen from the air located at Sheffield, Alabama.

It is difficult to secure an adequate supply of nitrogen. It is found in combination with other materials but these materials are scarce and high. Nitrogen-bearing materials are called nitrogenous or ammoniates. It is often confusing to laymen to use the words "nitrogen" and "ammonia" as synonymous, and yet speak of them as being different elements. This is because ammonia by weight is fourteen parts nitrogen to three parts hydrogen.

ITS FUNCTION

Protoplasm is the physical basis of life and nitrogen is necessary for its production. The effect of nitrogen on plants is to build up the body, give rich, green color to leaf, and vigorous growth.

Too little stunts growth, and too much gives rank growth with sappy weak stalks and delays ripening. Large amounts suit plants like celery, lettuce, etc., where crisp, tender stems and leaves are wanted. For immediate results it is best to use nitrate of soda, while for seasonal growth other forms can be used. The activity as well as availability of nitrogen in materials like leather scrap, hair, or peat, is but one-fifth to one-tenth as much as that in nitrate of soda.

PHOSPHORIC ACID

Phosphoric acid is a compound which contains 43.7% phosphorus by weight. Nature does not isolate phosphorus; it is always combined with something else—usually lime. The principal commercial sources are phosphate rock, acid phosphate, bone, and Thomas slag.

In ground phosphate rock, or floats, and bone black, the phosphoric acid is insoluble, and therefore produces effects very slowly. These may be used for composts where immediate effects are not needed. Raw phosphates and

bone black are treated with sulphuric acid, rendering them soluble, and thus producing acid phosphate. When rendered available it is of equal value, no matter from what source obtained. Splendid results have been secured by the use of soft phosphate when used in sufficient quantities and properly composted or thoroughly inoculated.

It takes 50,000 pounds of water to dissolve one pound of insoluble phosphoric acid. Of course, this means that "insoluble" does not mean that which is incapable of being dissolved, but that it is in combination of two parts of phosphoric acid with three parts of lime. This form is found in raw phosphate rock and in bones. The phosphorus found in bones is of greater value than that found in rock, for the reason that bone is organic and decays when put into the ground, where it rots through the work of bacteria. Rock phosphoric acid is of no value until it has been dissolved into soil moisture. Even grinding it to powder won't help much, as it must be in such solution as to pass through the skin of the fibre rootlets. The rock must be treated with sulphuric acid, which changes two of the three parts of lime into gypsum or land plaster—sulphate of lime—these two parts kill the acid and leave the phosphoric acid combined with only one part of lime—and the product is acid phosphate or superphosphate. Methods so far used in extracting the phosphate rock from the soil and in preparing it for fertilizer have been very wasteful, as commercial acid phosphate made from 32 per cent rock contains only 16 per cent of phosphoric acid. The elaborate washing and screening process now used in preparing the rock for treatment with acid often results in a loss of more than half the material. A new process recently discovered promises to save this waste. (See statement at close of this article).

The combination of both water soluble and *reverted* phosphoric acid is the form in commercial fertilizers. It is a combination of two parts of phosphoric acid and one part of lime. After soluble phosphoric acid has been in the soil for a time it undergoes another change—the lime uniting with the phosphorus becomes "reverted," which results in a combination of two parts phosphoric acid with two parts of lime. In this reverted form the phosphoric acid is held in the soil, and becomes slowly available.

MATERIALS FURNISHING PHOSPHORIC ACID

Material	Total	Available	Insoluble
Acid Phosphate.....	16 to 19	15 to 17	1 to 2
Dissolved Bone Black..	17 to 19	15 to 18	1 to 2
Bone Meal	20 to 25	5 to 8	15 to 17
Dissolved Bone	15 to 17	13 to 15	2 to 3
Peruvian Guano	12 to 15	7 to 8	5 to 8
Thomas Slag	22 to 24		22 to 24

In experiments Thomas slag, when finely ground, is found to furnish a degree of food for growing plants—although chemical tests do not indicate it. Bone meal is very similar, but breaks down under bacterial action.

FUNCTIONS OF PHOSPHORUS

Phosphorus is necessary for the development of straw, seed, and good root systems. It gives stability and vigor to plants, builds fiber, hardens and matures growth, and is a ripening element. It is conducive to favorable and beneficial soil bacteria.

POTASH

Potassium is one of the elements. The Latin name is kalium, which is the explanation of why K stands for potassium in chemistry. The oxide of potassium is a compound of 78 parts by weight of potassium combined with sixteen parts by weight of oxygen. The chemist's symbolic formula is K_2O ; sulphur of potash K_2SO_4 ; muriate of potash KCl ; sulphate of magnesia $MgSO_4$; chloride of magnesia $MgCl_2$; chloride of sodium $NaCl$; sulphate of lime $CaSO_4$.

The natural products yielding potash are:

Kainit, calculated to pure potash K_2O	12.8
Carnallit, calculated to pure potash K_2O ..	9.0
Sylvinit, calculated to pure potash K_2O ..	12.4

The great deposits of potash at Stassfurt, Germany, were discovered in 1847, and the phosphate rock of South Carolina in 1868, and later in Florida, Tennssee, Utah, Wyoming, Montana, Kentucky, Arkansas and Virginia. It

was not till after the Franco-Prussian War that extensive demonstrations of the value of phosphate and potash were carried on. Germany had potash and no phosphate; America had phosphate and no potash. The Germans were exhausting the available phosphorus in their soils, and we were using up the available potash in our soils, by an unbalanced system of plant feeding.

The discovery of the Thomas basic slag processes of making steels from phosphatic iron ore greatly supplemented the German fertilizer needs, but it did not help America's need for potash. The Germans made the most of this wonderful monopoly. The writer visited one of their largest mines in 1913. It is a wonderful bed of crude rock salts. The mining is easy and simple, as no extraneous matter has to be removed. As it is tunneled there is no overburden to remove and there is no seepage of water to interfere.

The "raw deals" so often handed American dealers provoked extensive explorations to discover deposits, and experiments to discover means of manufacturing it from other materials containing this element. The lakes of California, Utah, and Nebraska were found to contain an abundance of potash and certain shales were found to be workable for potash; the waste of blast furnaces, beet-sugar mills, molasses distilleries, wool-washing plants, and cement works. The cost of manufacture thus far has been too high to compete with the German product—about \$125.00 per ton.

During 1919 California had twelve plants and turned out 33,870 short tons; Nebraska, 10 plants, with 34,142 tons output; Utah, five plants, and 33,858 tons.

Pure potassium has peculiarities that prevent its use as a plant food. It must be combined with other elements before being suitable for fertilizer. Two parts potassium with one of sulphur and four of oxygen is one combination. Sulphate of potash K_2SO_4 , potassium and chlorine, fifty-fifty, is another which makes muriate of potash—symbol KCl . A third combination is two combining weights of potassium, with one of carbon and three of oxygen—carbonate of potash K_2CO_3 . A fourth combination is one each of potassium and nitrogen and three of oxygen. This is nitrate of potash, symbol KNO_3 .

Potash is essential for the production of starch, fiber and the full development of plant and seed.

BACTERIA

Bacteria play so important a part in fertility of soil that they hold an important place in the discussion of fertilizers.

Bacteria are microscopic organisms, microbes, fungi, or parasites. An organism is either an animal or plant having organs performing special functions.

By far the greater percentage of bacteria is vegetable, both in soil and in animal organisms, but vegetable bacteria have no chlorophyl. The bacteria that thrives in the human organism may be beneficial—as in the process of digestion—or injurious,—as in case of the various disease-producing germs.

Bacteria live in soil. They cannot thrive where there is no humus. There are many kinds, and each kind has its special substances on which it thrives best. A group, known as ammonifiers, begins to grow as soon as placed in moist soil. It lives but a short time, and the protein which has been absorbed is changed into ammonia. When this group dies other groups take up the ammonia, and change it into nitrite. When it dies, another group takes up this nitrite and changes it into nitrate. This last product is readily soluble and is dissolved into soil moisture. The rootlets then take it in along with the soil moisture. Most organic and some inorganic fertilizers must be changed by these bacteria before the plant foods become available. They need warmth, moisture, humus, and air. Too much water excludes the air and too much acid hinders their growth.

Different kinds of bacteria are needed to dissolve different kinds of materials in the soil. Good results have been secured in some soils through the use of phosphogermers housed in humus, but with no claim of plant food content. By housing numerous kinds of bacteria in a suitable medium, various materials containing plant food elements are released by their action, which would not be affected by only one kind of bacteria.

HUMUS

Burzelius classes all organic matter in the soil as humus. Humus is formed by the decay of vegetable matter—vegetable mold.

Humus is a generic term applied to a group of substances, which form the organic matter of the soil.

They range in color from a brownish yellow to a blackish brown, or black, and are non-volatile. They are probably all composed of carbon, hydrogen, and oxygen.

While Mulder regarded humus as the almost exclusive source of the organic constituents of plants, Liebig, and other chemists of today, regard the atmosphere as capable of affording an abundant supply of all these substances. The atmosphere consists of nitrogen and oxygen gases, vapor, carbonic, and nitric acids, and ammonia. Plants can appropriate these from the air only by the roots or foliage. Leguminous plants extract nitrogen from the air by way of the roots through bacterial action in the nodules on the roots. The air comes in contact with the roots by the soil being porous, which is aided by cultivation. Some soils are closer than others, and some growths have a tendency to impact the surface with turf—Bermuda grass, as an example—while other plants have a loosening effect—as the cocklebur.

Humus performs a useful function in retaining moisture, furnishing a habitat for bacteria, and in holding potash, soda, lime, and magnesia, and in preventing them from being washed out of the soil.

PEAT

Scientists have divided peat into several varieties. The words peat, muck, humus, marsh, bog, and heath are often used synonymously, but they are far from being synonymous. Peat is partially carbonized vegetable matter. There are various kinds of peat due to the vegetation of which it is composed and the conditions under which the formation has taken place, and the age of the deposit. The materials contributing to peat beds are many, including both land, and aquatic vegetation, such as ferns, mosses, grasses, roots, weeds, twigs, leaves, shrubs, etc., found in the presence of water. In an advanced stage of decomposition, combined with more or less dirt, shells, etc., it is called muck. Peat may be humus, but humus is not necessarily peat.

Dr. William Whitney, Chief, Bureau of Soils, Department of Agriculture, Washington, D. C., under date of August 6th, 1920, says:

"It is impossible to make definite statement as to the availability of the nitrogen contained in peat. Its ammonia content at any time is low, and is considered as very slowly available, hence, commonly classed as a low grade nitrogenous fertilizer, especially when compared with tankage, and dried blood. Recent observations, however, seem to indicate that the availability is increased by proper promotion of bacterial growth by inoculation as by the use of barnyard manure, with the peat. In connection with mineral nitrate, however, it promises to be of value in supplying a slowly available supply of nitrogen after the readily soluble nitrates have been used up."

Organic materials have been extensively used to secure nitrogen, but such sources as cottonseed meal, blood, tankage, fish-scrap, ground bone, etc., are now used as feed stuffs and the price is so high as to be almost prohibitive as material for fertilizer. It is desirable to derive a part of the nitrogen from an organic source, so that there will be a supply of nitrogen during the entire period of growth. The present sources of supply of nitrogen—led by the nitrate beds of Chile—are apt to remain our dependence unless atmospheric nitrogen should be produced cheaply enough to compete with them.

AS A FILLER

As a filler for commercial fertilizer, peat, when properly prepared has no superior, and few equals now in use by fertilizer manufacturers. It has three distinct points in its favor over other fillers extensively used: (a) it furnishes a splendid habitat for bacteria; (b) it is an ideal absorbant of excess ammonia that might escape from other ammoniates used in the formula, holding them in as available condition as any other nitrates; (c) being a humus, it has moisture-retaining quality that is much in its favor, aiding drouthy soils and helping bacterial action.

AS A FERTILIZER

The fact that peat properly conditioned before being dug has an appreciable amount of plant food, is well established. That this can be made available by bacterial

action, is also beyond question. That fertilizer manufacturers should be allowed to claim credit in their brands for the ammonia in peat when used as a filler, would seem to follow. But there are two very essential things which must be known before the legitimacy of this claim can be determined. First, was the peat of proper quality and in proper condition before being dug? second, does the process of treatment after being dug, in preparing it for the fertilizer trade, damage it as a fertilizing material? It all depends upon these two things. If the peat is of good quality, sun-dried, ground, treated bacterially with numerous groups of germs, the value is beyond question. On the other hand, if the peat is of poor quality, raw, and undecomposed, is dug and dried to 10% moisture by blast furnace—what have you? As another proposition, if the peat is alright as to quality, and is dried by oil blast furnace to 15% moisture, what is the result?

We have the authority of chemists that it is ruined, and of chemists that it is not impaired.

Dr. Thomas, of the Earl-Thomas cultures corporation, New York, says, under date of Oct. 14th, 1920: "When peat of the ligneous variety is dried out with excessive heat in a short space of time, it becomes very insoluble." The ligneous variety is not the best for fertilizer. Dr. John N. Hoff, industrial and agricultural chemist, New York, says under date of Oct. 22nd, 1920: "The effect of drying peat in direct heat driers with oil fuel does not reduce the availability of the ammonia. * * * * * As peat will gasify and burn at about 414 degrees Fahrenheit, you will realize that the partly dried peat will not permit final drying much above the average temperature of sterilization."

Under date of December 27, 1920, he writes: "It has been my observation that the average peat will begin to gasify between 300 and 400 degrees Fahrenheit and therefore is likely to burn, which will produce ash with consequent loss of organic matter."

The heat-drying process is now carried on without the blast coming in contact with the peat, the degree of dryness is thus made optional. If the peat is rendered too dry for bacteria to live in it, the inoculation can be done by the farmer—the easier if he does his own mixing.

HOME MIXING

If the farmer would adopt and practice home mixing of fertilizers it would save millions of dollars to the producers of the country. The farmers of the U. S. use about 6,900,000 tons of commercial fertilizer a year—costing some \$200,000,000. It is a conservative estimate that a saving of \$8 per ton can be made by home mixing, which would be approximately \$55,000,000 per annum! Not that fertilizer mixers make exorbitant profits, but they must charge enough to cover their enormous overhead expenses, to which must be added the freight on the dirt used as a filler. It is good business, economical, educational, and a mark of individuality, to buy your own ingredients, and do your own compounding. The elements composing complete fertilizer can be purchased separately. They should be bought by communities in bulk, and handled on a cash basis if possible.

The reasons why the majority of farmers buy complete fertilizers are: (a) the ease with which it can be bought on time; (b) the desire to shun the work of buying separately the different elements and mixing them; (c) the lack of self confidence.

The following articles constitute a fairly good equipment for home-mixing fertilizer:

- 1—A screen with 3 meshes to the inch, 5 ft. long, and 2 ft. wide.
- 2—A shovel with square point.
- 3—An iron rake.
- 4—A pair of large scales.
- 5—A tight barn floor, or hard, dry, smooth ground.
- 6—A heavy wooden pestle for crushing big lumps of the material.

The screening should be done first—all lumps crushed and screened again. Then spread out the most bulky of the elements in layers—one on another—beginning with the most bulky constituent. Shovel the heap several times, until no streaks appear. Then sack or box and keep in dry place until ready to use.

There are compatible and incompatible elements. Just as a physician who knows nothing of chemistry or pharmacy might write a prescription that could not be com-

pounded because of incompatibility of certain chemicals included, so, in mixing the constituents of a complete fertilizer, it is necessary to know the action of the different ingredients upon each other. To mix potash salts with Thomas slag is likely to result in hardening, and render it necessary to crush and pulverize before using. Certain ammoniates contain iron, and if mixed with acid phosphate will lose a considerable portion of its available phosphoric acid. Sulphur of ammonia should not be mixed with Thomas slag and Norwegian nitrate. Cyanamid should not be mixed directly with sulphate of ammonia, but should be mixed as per directions. Basic slag should not be mixed with sulphate of ammonia, blood, or tankage, as the lime affects these materials and releases ammonia. Lime should not be mixed with guano as it causes nitrogen to escape. Sulphate of ammonia should not be mixed with basic slag nor quicklime with acid phosphate. To mix lime with superphosphate renders the phosphoric acid less soluble—therefore, less valuable.

The following table shows how to find the quantity of each material necessary to make 1,000 pounds of fertilizer of any desired analysis:

Percentage required.	Available Nitrogen from Nitrate of Soda.	Available Phosphoric Acid.		Available Potash from Sulphate of Potash
		from 14% Acid Phosphate.	from 16% Acid Phosphate	
1%	67 lbs.	71 lbs.	63 lbs.	19 lbs.
2%	133 lbs.	143 lbs.	125 lbs.	38 lbs.
3%	200 lbs.	214 lbs.	188 lbs.	58 lbs.
4%	267 lbs.	286 lbs.	250 lbs.	77 lbs.
5%	333 lbs.	357 lbs.	313 lbs.	96 lbs.
6%	400 lbs.	429 lbs.	375 lbs.	115 lbs.
7%	467 lbs.	500 lbs.	438 lbs.	135 lbs.
8%	533 lbs.	571 lbs.	500 lbs.	154 lbs.
9%	600 lbs.	643 lbs.	563 lbs.	173 lbs.
10%	667 lbs.	714 lbs.	625 lbs.	192 lbs.

If a formula 4-7-5 is wanted, it would mean 267 pounds of nitrogen, 500 pounds of 14% phosphate, and 96 pounds of sulphate of potash, making a total of 863 pounds, which contains the same amount of plant food as 1000 pounds of 4-7-5 complete, ready-mixed, commercial fertilizer. To make out 1000 pounds add dry loam as "filler."

A. B. Ross has shown that neither in the Pennsylvania nor Ohio long-time experiments did nitrogen prove profitable in fertilizers for rotations containing clover. Those experiments showed that plants got nitrogen from elsewhere than legumes or from commercial fertilizers, as the amounts taken from the soils exceeded the amount stored by the legumes and the amount contained in the applied fertilizer.

Legume bacteria are not the only soil organisms that can make direct use of nitrogen from the air. A group, known as the azotobacter, have this power. Perhaps there are others. This is mentioned as a suggestion to those who may get results which differ from what they had a right to expect from regular methods.

What we all like is a "cut-and-dried" formula for doing things, and we do not like the formulae to disappoint us when being put to the test. But in the use of any formula herewith given, it should be borne in mind that much depends upon the mechanical condition of the soil, the elements of available plant food already in the soil, and other contingencies, as to the results that will follow.

POTATOES.

(*Irish*)

If you use complete fertilizer you might have a formula like this:

Nitrogen	4%
Available phosphoric acid.....	6%
Potash	8%
Ammonia	5%
Phosphoric Acid	8%
Potash	5%

And use from 1000 to 15000 pounds per acre. Or if you do your own mixing, the formula might be:

Nitrate of soda	320
Acid phosphate	480
Sulphate of potash	100
Dry loam	100

Stated in percentages:

Available nitrogen	4.8
Available phosphoric acid	7.68
Available potash	5.0

This is taking the 1000-pound basis. It will need a thousand pounds to the acre, but 300 additional pounds of loam should be added to secure a satisfactory mechanical condition for the fertilizer.

POTATOES

(Sweet)

Ammonia	4%
Available phosphoric acid	6%
Available potash	8%

Six to eight hundred pounds per acre, applied at time of planting.

TOBACCO

Available nitrogen	5%
Available phosphoric acid	4%
Available potash	10%

Kainit or muriate of potash should be avoided, as the chlorine mitigates against burning well in cigars. The sulphate form is preferred. Per acre, from 1000 to 1500 pounds, preferably given in three equal dressings, just before planting and at time of first hoeing, and last, from two to three weeks later.

CORN

Fifty bushels of corn per acre takes from the soil 67 pounds of nitrogen, 31 of phosphoric acid, and 80 pounds of potash:

Available nitrogen	3%
Available phosphoric acid	7%
Available potash	6%

COTTON

Cotton is "easy" on land, but the clean cultivation results in the leaching and washing of the soil. A crop of 300 pounds of lint removes from the soil in lint, seed, stalks, etc., about 44 pounds of nitrogen, 49 pounds of potash, and 12 pounds of phosphoric acid.

Were all but the lint returned to the land each year, it would show no signs of exhaustion. The relative quantities of the various ingredients of cotton fertilizer depends entirely upon the soil. Cotton can be grown on as great a variety of soils as any crop of the Southern States. The following may be used where the soil is already fairly well balanced:

Nitrogen	3%
Available phosphoric acid	8%
Potash	4%

PEANUTS

As this plant is a legume and gets nitrogen from the air acid phosphate and potash are the chief elements to use in fertilizing it. The soil should be rich in lime. The formula should perhaps be 8% potash, and 8% phosphoric acid, and the amount from 500 to 800 pounds per acre. However, this is a mere suggestion as it is entirely dependent on whether or not the soil has either of these elements in abundance; in some soils, a small per cent of nitrogen should be used.

SUGAR CANE

Ammonia	4%
Available phosphoric acid	8%
Potash	4%

Sugarcane should yield from 25 to 40 tons per acre. The amount of fertilizer should be from 600 to 800 pounds, per acre.

SORGHUM

Nitrogen	4%
Available phosphoric acid	6%
Actual potash	8%

Amount per acre 600 to 800 pounds.

RICE

Ammonia	2%
Available phosphoric acid	10%
Potash	4%

When the land has an organic soil, such as peat, the nitrogen can be reduced, and the other elements increased. From 400 to 500 pounds per acre is the correct amount.

OATS

Ammonia	5%
Available phosphoric acid	8%
Potash	3%

Apply 400 to 600 pounds per acre.

WHEAT

Nitrogen	3%
Available phosphoric acid	8%
Actual potash	4%

Apply 400 to 600 pounds per acre.

In the clay hill counties of Florida, wheat can be grown, and the best preparation is to follow a crop of cowpeas that were sown in July and all turned under at the time of maturity that would best suit the mowing of hay. The peas should be sown late for the reason that they vine much better than when sown early. They can be sown in corn at the last plowing. Should they mature too early for sowing wheat, they should be plowed under anyway, and allowed to lie till sowing time.

If the vines are rank, as they should be, when the land is fertile enough to make wheat, it will take a good two horse plow to turn them under, and the plow should have a rolling cutter in front to cut the vines, so that the plow will not be continually choking. It is impossible to do much with iron tooth drag in these vines,—the teeth will have to be slanted backward, so as to slide over the vines, that are left uncovered after the land is plowed.

The grain should always be treated for smut before sowing.

GRASSES

Clover and grasses for hay or pastures should be fertilized according to the nature of each. Lespedeza is an excellent legume for general use on dry hills, as pasture, and when soil is sufficiently fertile to produce rank growth, yields good hay. The leading farm grasses of Florida are Bermuda, Johnson, St. Augustine, and Carpet—others are coming into use.

Where the soil is adapted to Johnson grass, it is well-nigh impossible to kill it. When a farm is well set to it, the owner has a Johnson grass farm forever. Bermuda is also very difficult to destroy. Heavy crops of cowpeas, velvet beans, kudzu, or sugarcane will shade it and kill it faster than any other treatment. Carpet grass is easily destroyed and therefore, is to be recommended for lawn-making, and also for grazing.

Nitrogen	2%
Phosphoric acid	8%
Potash	8%

GARDEN CROPS

Good stable manure is the most valuable fertilizing material for the growing of all classes of vegetables upon all types of soils. It must often be reinforced with commercial fertilizers. There is not enough stable manure to supply the demand for general field crops and near large cities it is inadequate for truck farming—since the automobile car and truck have superseded the horse in hauling service.

Stable manure should be well worked into the soil before planting. The nearer planting time, manure is applied, the finer it should be pulverized.

For asparagus, beets, carrots, cauliflower, celery, cucumbers, egg-plants, kale, lettuce, musk-melons, onions, English peas, peppers, radishes, spinach, squash, and tomatoes.

Nitrogen	5%
Available phosphoric acid	7%
Available potash	5%

There is no iron-clad formula and this is given as an "indicator" and guide rather than as a specific from which there is to be no variation.

BEANS

Ammonia	3%
Available phosphoric acid	7%
Potash	7%

Or, per acre

Bone meal	1700
Muriate of potash	300

Or, per acre

Nitrate of soda.....	100 pounds.
Acid phosphate	400 pounds.
Muriate of potash	100 pounds.

CABBAGE

Cabbage needs a very rich soil. Where stable manure cannot be secured, 1000 to 2000 pounds of fertilizer may be used in something of the following proportion:

Nitrate of soda	300 pounds.
Bone meal	500 pounds.
Muriate of potash.....	200 pounds.

It should be well incorporated into the soil before planting.

CITRUS FRUITS

The experienced citrus fruit grower has learned by experience the kind, amount, and frequency of use, of fertilizer for his grove. The newcomer to a citrus section should consult growers of long experience in his locality.

Nitrogen plays an important part in the production of new wood and leaf growth. Excess of nitrogen produces die-back, which causes the skin to become thick-skinned and puffy. Phosphorus is necessary for the proper development of the fruit. Sulphate of potassium is usually preferable to the muriate as the latter sometimes has an injurious effect on citrus trees.

Use from one to three pounds per tree for young trees, according to age, of

Nitrogen	5%
Phosphorus	5%
Potash	3%

Apply in early spring, mid-summer, and in September. Increase this about a pound a year until the trees are five or six years old, and begin to bear commercial crops. Then use three applications per year with,

Nitrogen	4%
Available phosphoric acid	8%
Potash	4%

Apply in early spring, and midsummer. The fall application should be between November 15th, and Decem-

ber 15th with the nitrogen reduced to 3% without changing the other materials.

Trees well bearing from ten years old up, should receive from 15 to 30 pounds per year. Older, and heavy-bearing trees receive from 30 to 75 pounds of fertilizer per annum where no green crops are turned under, and unless the trees have a great distance between them, green crops cannot be successfully grown.

A WORD ABOUT FORMULAE

There is no universal standard in designating the ingredients of complete fertilizers by numerals in a certain order. In other words, a formula—7-5-8—may mean that the seven stands for phosphoric acid or it may stand for nitrogen. It seems that all agree in placing potash last, but there is no agreement as to which comes first nitrogen or phosphorus. In alphabetical order nitrogen or ammonia would come first, and in a great deal of literature on the subject that is the order in which they are mentioned. The fertilizer tags of Florida place phosphoric acid first, which means that a numerical formula would mean that the first number stands for phosphoric acid, the second for ammonia or nitrogen and the third for potash.

With this understanding a formula—8-5-3—means that 100 pounds of complete fertilizer contains eight pounds of phosphoric acid, five pounds of nitrogen or ammonia and three pounds of potash.

As a ton is two thousand pounds it contains twenty times as much of each fertilizing ingredient as a hundred pounds of the fertilizer contains.

Therefore:

To ascertain the number of pounds of each ingredient in a ton of mixed fertilizer:

Multiply the per cent required by 20.

For instance: In the above formula multiplied by 20 equals 160; 5 multiplied by 20 equals 100; and 3 multiplied by 20 equals 60. Therefore one ton of this mixture would contain:

Phosphoric acid	160 pounds
Nitrogen	100 pounds
Potash	60 pounds

The remainder of the weight is extraneous matter.

To find the quantity of an ingredient needed to supply the per cent required:

Divide the number of pounds of the ingredient in a ton by the number of pounds of that ingredient in a hundred pounds of the material containing it. The result will be the number of pounds of raw material used to give the percentage desired in the formula.

If we use acid phosphate containing 16 per cent of available phosphoric acid to find the quantity of raw material needed to supply the per cent of the ingredient required we must divide the number of pounds required in a ton by the 16.

If cotton seed meal is used to obtain the nitrogen the number of pounds required in a ton must be divided by 6.18, as that is the per cent of nitrogen in a hundred pounds of the meal.

If we use muriate of potash to finish the formula we use a material that yields 51 per cent of potash; but we can count in 1.8 per cent of potash from the cotton seed meal that we used which would reduce the requirements of muriate, and we deduct the number of pounds that has been added by the meal from the number of pounds to be added by the muriate.

In like manner if the filler that is used contains available nitrogen the per cent thus added may be deducted from the cotton seed meal. This is seldom the case, but it might be so if properly prepared peat is used as a filler. In the above illustration the use of peat would lessen the amount of cotton seed meal, which, in turn, would lessen the amount of potash furnished by the meal. However it is not necessary to split hairs over such small discrepancies in proportion. The rules for calculation here-with given are approximately accurate in results, and entirely practical but it will show a little over a ton.

TO FIND THE ANALYSIS OF A GIVEN MIXTURE

Suppose a farmer has on hand available materials which he wishes to use in certain proportions and wants to know the analysis of the proposed mixture. Take 1,000 pounds of acid phosphate, 16 per cent; 800 pounds of cotton seed meal, and 200 pounds of kainit.

One thousand pounds of 16% acid phosphate contains 160 pounds of available acid; eight hundred pounds of

meal contains eight times 6.18, or 50 pounds of nitrogen. Two hundred pounds of kainit at 12.5 pounds per hundred contains 25 pounds of potash. The eight hundred pounds of meal contains 1.8 pounds per hundred, or 14.4 pounds of potash.

Therefore the above mixture contains phosphoric acid, 160 pounds; nitrogen, 50 pounds; potash, 39.4 pounds.

To find the per cent of each of these materials in a ton we divide each by 2,000, with the following results: Phosphoric acid, 8%; nitrogen, 3%; potash, 2%; formula, 8-3-2.

"Converting" elements into equivalents:

To illustrate: Ammonia contains 82 per cent of nitrogen. Therefore to "convert" per cent of ammonia into nitrogen multiply by 0.824.

To "convert" per cent of nitrogen into equivalent in ammonia multiply by 1.214.

Three per cent ammonia multiplied by 0.824 equals 2.47 per cent nitrogen.

Two per cent nitrogen multiplied by 1.2214 equals 2.44 per cent ammonia.

To convert ammonia into protein multiply by 5.15; nitrate of soda into nitrogen multiply by 0.1647; nitrogen into protein multiply by 6.25; muriate of potash into actual potash multiply by 0.632; actual potash into muriate multiply by 1.583; sulphate of potash into actual potash multiply by 0.541; actual potash into sulphate of potash multiply by 1.85; nitrate of potash into nitrogen multiply by 0.139; carbonate of potash into actual potash multiply by 0.681; actual potash into carbonate of potash multiply by 1.466; chlorine in kainit multiply potash (K_2O) by 2.33.

In calculating values you simply take the number of pounds of each ingredient in a ton and multiply it by the price of the materials used. The ruling price use to be 4 cents per pound each for phosphoric acid and potash and 18 cents for nitrogen. But now 16% available phosphoric acid is worth \$28.00 a ton purchased for cash in ton lots at Florida seaports; sulphate of potash, \$180; nitrate of potash, \$130.00; sulphate of ammonia, \$137.00. (October, 1920).

The Department of Agriculture "News Letter" of Dec. 22, 1920, reviewed the fertilizer situation from which the following is quoted:

"November 15 the estimated average purchase price of ammonia was \$4 a unit, representing a decline of \$1 a unit since September 25. Since November 15 there have been further substantial reductions in the prices of raw materials.

"In connection with the negotiations, a further important situation was developed, namely, that the larger manufacturers, in determining the prices of their mixed fertilizers, have figured acid phosphate at a price which is 20 cents per unit lower than for the fall of 1920. The trade journals, on the other hand, show that the price of 68 per cent Florida pebble phosphate rock was quoted from \$6.85 per ton in June and \$11.50 per ton in September and that the basis has been changed from f. o. b. Tampa to f. o. b. mines, making an additional difference of about \$1.20 per ton. They also show that the quoted price of bulk acid phosphate increased from \$18.50 to \$20 per ton. The Federal Trade Commission, in its report on the fertilizer industry, indicates that the large fertilizer manufacturers have practical control of the phosphate situation through the ownership of acid phosphate plants and of mines and factories and through the existence of long-time contracts at low prices with other than their own mines."

There being hundreds of formulae of commercial fertilizers on the market in Florida, it was thought best to avoid the useless confusion resulting from the impractical multiplicity of formulae. The Horticultural Society of Florida, jointly with Extension Agents, had a committee to work out twenty-two formulae and recommend their adoption. It is herewith published as adopted by the committee:

Gainesville, Florida, May 3, 1920.

The Committee appointed on Standardization of Fertilizer Formulae met in the Experiment Station building at Gainesville, Florida, continuing their deliberations in the forenoon and afternoon of May 3d. After examining large amounts of records and data, we beg to make the following recommendations:

1. That standard fertilizers in Florida shall be made of the following formulae:

Ammonia	Phosphoric Acid	Potash
0	10	4
2	10	3
3	10	2
3	8	3
3	9	3
3	8	5
3	8	5
4	8	2
4	9	2
4	6	3
4	7	3
4	8	3
4	8	4
4	6	5
4	7	5
4	6	8
4	5	6
5	8	0
5	7	2
5	6	3
5	8	3
5	6	4

2. That no standard brand be made to contain fractional percentages of plant food.

3. That in stating percentages of ammonia it shall be stated in proportion of the water soluble, nitric nitrogen and organic nitrogen.

4. That we recommend the following combinations for ammonias with reasonable tolerances:

First—One hundred per cent water soluble.

Second—Seventy-five per cent water soluble,
twenty-five per cent organic.

Third—Fifty per cent water soluble, fifty per
cent organic.

Fourth—Twenty-five per cent water soluble,
seventy-five per cent organic.

Fifth—One hundred per cent organic.

5. That the Horticultural Society recommend that the necessary additional analysts be provided by legislative appropriations from funds accruing from the fertilizer tag tax.

By the Committee:

P. H. ROLFS,
Chairman.
GEO. V. LEONARD,
A. G. HAMLIN,
W. F. MILLER,
GEO. P. THOMAS,
B. F. FLOYD,
R. W. RUPRECHT,
J. N. HARPER,
S. C. WARNER,
R. E. ROSE.

PRESCRIBING FERTILIZERS

Fertilizer prescriptions are at best founded on conclusions drawn from generalization rather than from positive knowledge. The chemical composition of the soil and its mechanical condition should be known but rarely is. The average composition of the crop to be grown, and the relative amounts of the three principal elements—nitrogen, phosphoric acid and potash—which a given crop of a given yield will extract from the soil, should be known, and whether or not the crop is leguminous.

Whether lands are sand, clay, hill, bottom, drained or wet, been in pasture or cultivated, plowed deep or shallow, crops rotated or not, etc., these items should be known; the results of past experience in fertilizing land under consideration; yellow foliage indicating lack of nitrogen; shedding of fruit indicating need of potash. Where flavor is an item potash should be used in the sulphate form. With pine apples and tobacco carbonate of potash and cotton seed meal are adapted.

All fertilizer tags should specify the sources from which the ingredients are derived and the per cent. derived from each source. They should also state the kind of materials used to make up the filler and the percentage of each material used, and pounds of available plant food per hundred. Protein, fat, sugar, starch, etc., are animal food terms and do not belong in fertilizer formulae.

The following is the form of official tag, under a ruling of the Department of Agriculture of Florida, and orders pertaining thereto:

THE STATE OF FLORIDA
DEPARTMENT OF AGRICULTURE:

Circular No. 14.

Tallahassee, Dec. 15th, 1920.

TO MANUFACTURERS AND IMPORTERS OF COMMERCIAL FERTILIZERS:

Please take notice that on and after January 1st, 1921, all Manufacturers and Importers of Commercial Fertilizers who make application to register in this office their various brands of fertilizers on January 1st of each year, as required under Section 5 of the Fertilizer Law, before offering them for sale in this State, must state in their application not only the minimum percentage of Ammonia, Phosphoric Acid and Potash guaranteed, but likewise state the percentage of Ammonia derived from Nitrate of Soda and Sulphate of Ammonia; and must also state on the tag, to be attached to each package, this same information and also the minimum number of pounds of total plant food contained in said fertilizer.

Those desiring to register for the year 1921 should, therefore, use the new form of blanks prepared for that purpose, which will be supplied upon request, should those which will be sent you, on or about the 15th of December, fail to reach you.

After a brand of fertilizer has been registered under a stated "trade name" and guaranteed analysis, there will be no changes allowed made in the guaranteed analysis of that particular brand during the year in which it was registered. Should parties for any reason desire to raise or lower the analysis of any of their brands, after they have been first registered, it will be necessary that the goods be registered under a different "trade name" from that previously used.

Respectfully submitted,

W. A. McRAE,
Commissioner of Agriculture.

INSPECTION
TAX
STAMP

200 POUNDS
FARMERS FANCY FERTILIZER

Manufactured by
JOHN SMITH & COMPANY JACKSONVILLE, FLA.

Guaranteed Analysis

Moisture at 212 Degrees Fht., not exceeding..... %
Available Phosphoric Acid, not less than..... %
Insoluble Phosphoric Acid, not less than..... %
Ammonia, Actual and Potential, not less than..... %
(Derived from Sulphate of Ammonia, Nitrate of
Soda, Blood and Bone)

Potash (K₂O), Water Soluble, not less than..... %
Chlorine, not exceeding..... %
Total Available Plant Food in this bag..... lbs.

Available Phos. Acid Derived from Bone Phosphate of Lime
1. Ammonia Derived from One or More of Following
Sources:

Nitrate of Soda }
Sulphate of Ammonia } %
Cyanamid }

2. Ammonia Derived from Organic Sources: Vegetable
and Animal. Potash Derived from Potash Salts

The following is from the Weekly News Letter of December 8, 1920, issued by the Federal Department of Agriculture:

Bureau of Soils Announces It Has Solved Problem of
World-Wide Interest—Process Worked Out on
Approximately Commercial Basis at
Arlington, Va.

What may prove to be a revolutionary development in the fertilizer industry of the world has been reached by the Bureau of Soils, United States Department of Agriculture, which has just solved the problem of extracting phosphoric acid from phosphate rock by heating mixtures of this mineral, sand, and coke to a smelting temperature in a fuel-fed furnace. The new process has been worked out on an approximately commercial basis at the department's experimental plant at Arlington, Va.

COMES LARGELY FROM FLORIDA

The phosphate used for fertilizer in the United States comes largely from the deposits of rock in Florida. There are also large deposits in Tennessee and a number of beds in South Carolina, where the rock was first exploited for this purpose. The established method for producing soluble phosphate has consisted in treating the rock with sulphuric acid. In practice, a quantity of sulphuric acid equal to the quantity of rock is used, and the resulting product, which is known as acid phosphate, contains only one-half the percentage of phosphoric acid contained in the rock from which it was derived. Commercial acid phosphate, for instance, made from a 32 per cent. rock contains only 16 per cent. of phosphoric acid. The elaborate washing and screening process now used in preparing phosphate rock for treatment with sulphuric acid often results in the loss of two-thirds of the rock, and it was with a view to saving this immense waste of phosphate that the new process was evolved.

The United States Department of Agriculture has been experimenting for some time along the lines of freeing the phosphoric acid by means of a high degree of heat. It was the first to adapt the Cottrell precipitator to the collection of phosphoric acid, the apparatus having been

previously devised by Dr. Cottrell to abate the smoke nuisance and to recover sulphuric acid from smelting operations. The first work was done in an electric furnace which was thought to be required to generate the high degree of heat necessary, about $1,600^{\circ}\text{C}$. or $2,900^{\circ}\text{F}$. At this temperature mixtures of phosphate rock, sand, and coke were reduced to a molten slag which was tapped off at intervals, the phosphoric acid escaping in the form of fumes which were afterwards collected in a liquid or solid form.

It soon became evident that this process would be prohibitively expensive with an electric furnace, except in localities where electric power could be obtained at a very low cost, about \$25 per horsepower a year, and the department therefore turned its attention to the possibilities of using crude oil, the cheapest fuel obtainable in the vicinity of the large phosphate-rock deposits of Florida. The efforts have recently met with success, and figures kept on the experimental runs at Arlington indicate that phosphoric acid can be extracted more cheaply in an oil-burning furnace than by the old sulphuric-acid process.

One problem which department scientists have worked out is that of keeping the fuel in direct contact with the rock material until the reaction is well started. For this purpose, and for convenience in handling, the material is briquetted with coke and sand. Briquetting keeps the coke fuel within the mass and retains it until the reaction is well started. Sand or silica is necessary to bring about the chemical reactions and this sand is largely present as an impurity in the Florida phosphate deposits, together with a clayey ingredient which acts as an excellent binder in making the briquettes. Thus the very impurities which make rock objectionable under the old process are turned into an asset.

ECONOMICS EFFECTED

The practical value of the new development is indicated by the fact that in the experimental runs at Arlington the department chemists were able to recover a 64 per cent. phosphoric acid (47 per cent. P_2O_5) as against the 16 per cent. product ordinarily obtained by the sulphuric-acid process. By passing ammonia gas into this phosphoric acid, solid ammonium phosphate, a very concentrated ma-

terial containing two valuable fertilizer ingredients, results. This material can stand heavy transportation and handling charges. It is also practicable to mix the phosphoric acid with phosphate rock in such proportions as to give a product containing 50 per cent of soluble phosphoric acid. This product is similar in its properties to ordinary 16 per cent. acid phosphate, is convenient to handle, and may be used by an intelligent farmer who has the technical knowledge to reduce the quantity placed upon the soil, and to guard against direct contact with seed. It also will permit a material saving in freight to central plants where the product may be diluted or mixed with other ingredients for shorter hauls. The difference between a 50 per cent. product and a 16 per cent. product means an immense saving in the freight charges, and the release of large quantities of rolling stock and vessel tonnage now engaged in the transportation of phosphate and phosphate rock.

While the actual cost of the new process in a large industrial plant is difficult to estimate with accuracy in the work thus far done, even on a small scale, it was found that the fuel consumption was only about 15 per cent. of the value of the product, while with the sulphuric-acid process the cost of the acid used seldom runs below 22 per cent. This factor, together with the reduction of freight charges, justifies the assumption that the new process will be of the utmost importance to the fertilizer industry and to the farmers who are compelled to use a constantly increasing amount of commercial fertilizer.

THE EVERGLADES

By F. C. ELLIOT, Chief Drainage Engineer

INTRODUCTION

This article is prepared for those who may be interested in the drainage of the Everglades of Florida, and in the great reclamation project, which has for its object the making of over 4,000,000 acres of hitherto useless territory fit for homes and for cultivation. In the following pages are briefly set forth some of the most important facts, conditions, and conclusions relative to the reclamation of Florida's great prairie.

Much of the information here offered is in answer to questions which have been selected from letters written by parties making inquiry relative to the Everglades. Other information is added in order to, in some degree and as briefly as practicable, complete and carry out a logical arrangement and treatment of the subject.

It is hoped that these pages may, to those who read them, set forth in true light, and afford to some extent, at least, a correct idea of the subject under discussion. From the language used technical terms have been eliminated as far as possible.

HISTORICAL

The great tract of land composing the Southern portion of Florida was, until recently, a valuable but neglected asset in the State's development. In fact, anything to be appreciated must first be known and understood. From the time that these millions of acres of land were granted to the State by Act of Congress of 1850, until the last few years, the region south of Lake Okeechobee, marked "Everglades," had no particular identity in the minds of the public. It had not been penetrated except occasionally by a stray scientist, an adventurous hunter, or a traveler with more curiosity than common, and it had never been surveyed. It was considered much in the same lights as the African Jungles were before Living-

ston and Lord Stanley made their excursions into the interior of those dangerous and obscure regions. There was little or nothing known of its fauna, its flora, or its soil. It was known that the Seminole Indians had their home on the edge of this vast inundated prairie and subsisted by hunting and fishing, but even they could not find a resting place in the interior, owing to inundation and continual overflow. So, from 1850 to 1900, a period of fifty years, this great asset of the State lay practically unexplored, with almost nothing accomplished in the way of practical development.

The reclamation of the Everglades was a much discussed subject for many years prior to the time of actually beginning construction operations on the drainage project. It was a subject of Congressional and Legislative action as early as 1845, and since that time various plans have been proposed for its reclamation, without substantial results, until the administration of 1901 to 1905. During this four year period the Governor of Florida undertook energetically and actively the preliminary steps necessary for the beginning of reclamation. These preliminary operations consisted in determining and fixing the status of Everglades land through opinions and actions of the Courts of the State with respect to drainage, of clearing up a number of outstanding conflicting statutory land grants, and of enacting laws by the Legislature for the creation of the area including the Everglades into a drainage district with full power and authority to actively proceed with the construction of drainage works, and the carrying out of a plan of reclamation.

In the campaign of 1905 the successful candidate for Governor was elected on a platform pledged to the drainage of the Everglades, and since that time, notwithstanding many obstacles necessary to be overcome, reclamation by drainage has on its own merits gradually become one of the fixed policies of the State just as has the improvement of its public highways, and advancement of its school system, or the carrying out of any other great and far-reaching development.

The Everglades Drainage District was created by Act of the Legislature of 1905, amended in 1907 and thereafter. Since that time the work of reclamation has taken definite form and has proceeded actively and without in-

erruption under successive laws and amendments of laws enacted by the Legislature especially for the benefit and encouragement of the Drainage District. See Chapter 6456, Acts of 1913, and acts amendatory thereto replacing the Acts of 1907.

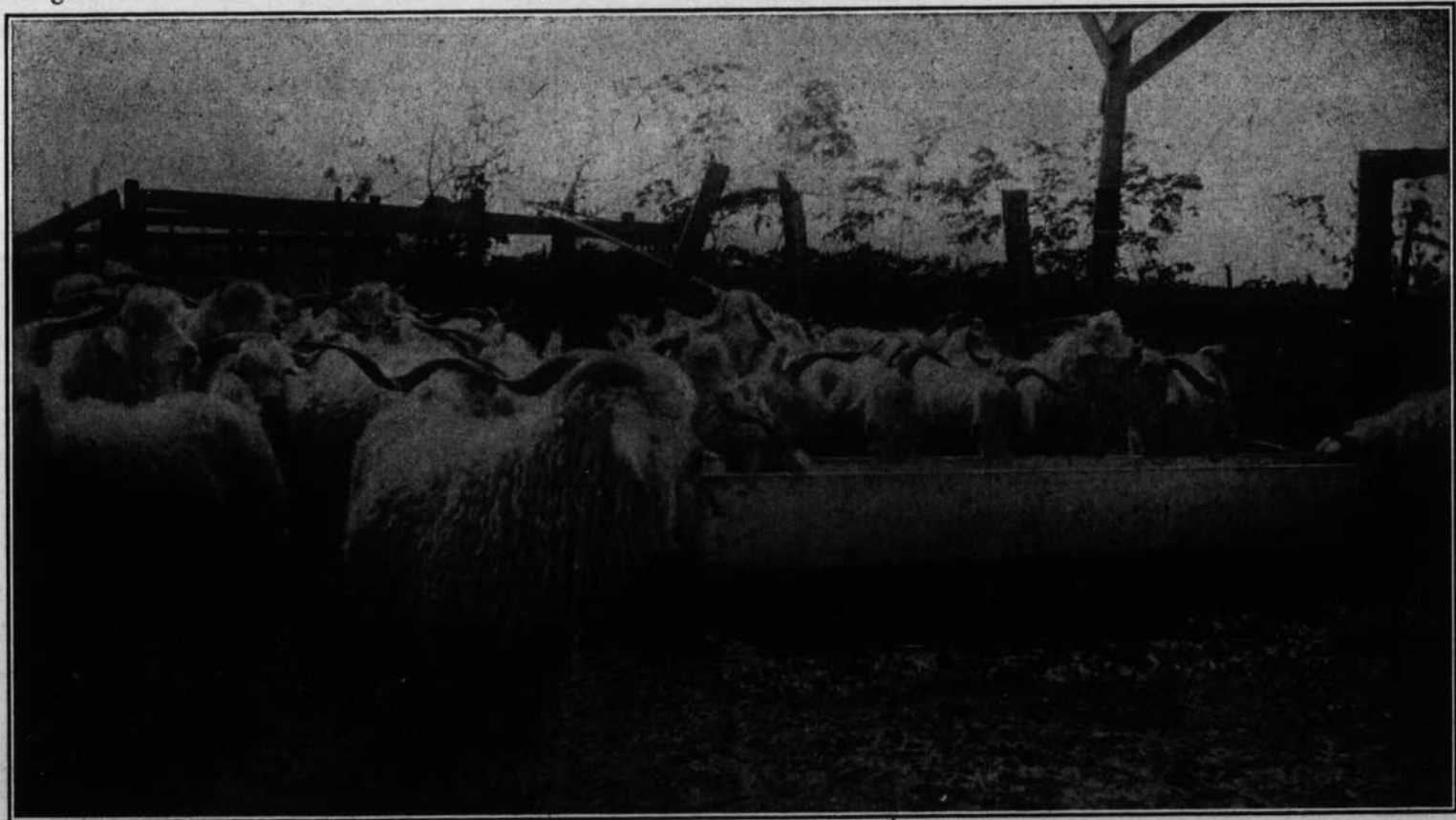
The district is administered by five commissioners, consisting of the Governor, Comptroller, State Treasurer, Attorney General, Commissioner of Agriculture and their successors in office. It is thus seen that the affairs of the district are vested in a Board composed of five of the highest State Officials, of which the Governor is chairman.

Originally all of the lands comprising the Everglades, and also portions of other lands not in the Everglades, but forming a part of the district, were owned by the State of Florida. These were among those lands designated as swamp and overflow lands, and were declared by the Legislature to constitute a fund called the Internal Improvement Fund, and the administration of this fund was vested in five Trustees. The principal object looking to the improvement and enhancing of the fund was the reclamation of the lands by means of canals and drains.

There now remain under the ownership of the State approximately one and one-fourth million acres of land in the Everglades, which together with all other lands in the Drainage District are subject to drainage taxes imposed by the Legislature for the purpose of providing funds for prosecuting the drainage work. At the present time Everglades Drainage taxes upon the lands in the Everglades amount to from five to twenty-eight cents per acre according to drainage benefits received by the lands and their nearness to main drainage canals, and to other reclamation works constructed or in process of construction.

DESCRIPTION OF THE EVERGLADES.

The Everglades proper are situated in the southeastern portion of the Florida peninsula, below the 27th parallel. Generally speaking, they lie south of Lake Okeechobee, have a width of about forty-five miles and a length of nearly one hundred miles, with an area of 2,862,000 acres. The Everglades Drainage District includes the Everglades proper and contiguous lands embraced in the



Angoras in Dade County.

same drainage area or basin. The total superficial area of the district is as follows:

Land	4,370,096 acres,	6828.28 square miles
Water	473,088 acres,	739.2 square miles
Total	4,843,184 acres,	7567.48 square miles

The surface of the Glades, before drainage began, was twenty-one feet above sea level, just south of Lake Okeechobee. By soil subsidence the land has become slightly reduced in those areas affected by drainage. The land slopes gently toward the south at the rate of about three inches per mile. West of Miami the surface of the Glades is from six to eight feet above sea level. The Glades are in no way a swamp. They present the appearance of a broad, level, grass-covered prairie. They are covered almost uniformly with a growth of saw-grass. There are few trees in the Everglades, and these are found only in scattering clumps. Small bushes are found near the eastern edge and in the southern portion in addition to the predominating saw-grass. Along the eastern border, where the Glades merge into the higher land, considerable growth of cypress occurs, usually of small size, though in some places fine timber is found. On the western edge of the Glades occur fine strips of prairie, now utilized as cattle ranges. A heavy growth of custard apple fringes the southern and southeastern shores of Lake Okeechobee. At their southern extremity, the Glades merge almost imperceptibly into the tide water of the sea.

The soil of the Everglades consists chiefly of muck or peat, varying in depth from ten to twelve feet just south of the lake, to three or four feet in the southern portion of the Glades. The muck is reduced to a thin layer at the edge of the Glades, finally giving way to the sand of the surrounding country. This muck soil was formed by the dying, falling and decaying of each successive growth of vegetation. In their normally inundated condition the Everglades were covered with water from a few inches to a foot or more in depth.

The vegetation of the Upper Glades is much denser, as a general rule, than in the Lower, or Southern Glades, and as the soil is produced principally by fallen vegetation, it would naturally be supposed that the soil would

be deeper over the areas of densest growth. Such is, in fact, the case, the soil being ten to twelve feet thick near Lake Okeechobee, where the vegetable growth is heaviest, and thinner, as a rule, in the Southern Glades, where vegetation is and has been less dense. Of course there are other agencies which also affected the thickness of the muck or peat, but the one above referred to is the most important under normal glade conditions.

A log thoroughly and continuously immersed in fresh water will be preserved for ages. Timbers have been removed from fresh water that are known to have been submerged for hundreds of years and found to be in a fair state of preservation. As so this accumulation of muck has been made possible by the preserving action of the water which covered it continually and prevented thorough decomposition which would have occurred had the ground been much exposed to the air.

Soil, generally speaking, is formed by the decomposition of the rocks of the surrounding country or by the building up and elevating of marine deposits. Often the soil is transported far from the place where it was originally formed. As a general rule, soil is the product of the destructive agencies of nature. Not so with the soil of the Everglades, which is an exception to the general rule. This is a cumulose soil and is a product of constructive agencies. It has built itself up by its growth of vegetation, and has actually created itself, to a very large extent at least, by this constructive process.

The soil is underlaid by a bed of limestone, chiefly oolitic in character, rather soft, but very jagged and uneven along the eastern edge and in the southern portion of the Glades. This gives place to a hard, smooth slab limestone further toward the interior of the Glades. Some of this original limestone formation through geological changes, has become impregnated with silica in the form of base chalcedony, is extremely sharp and hard, affording good material for concrete masonry and other building purposes, but expensive to move in the process of canal dredging.

This great bed of limestone forms a broad, shallow, flat-bottomed trough or flat basin, slightly tilted or turned up at the outer edges, these outer edges forming what is commonly called the rock rim of the Everglades. Down through the interior of this broad, shallow, flat-bottomed rock trough, from north to south, the slope or dip which

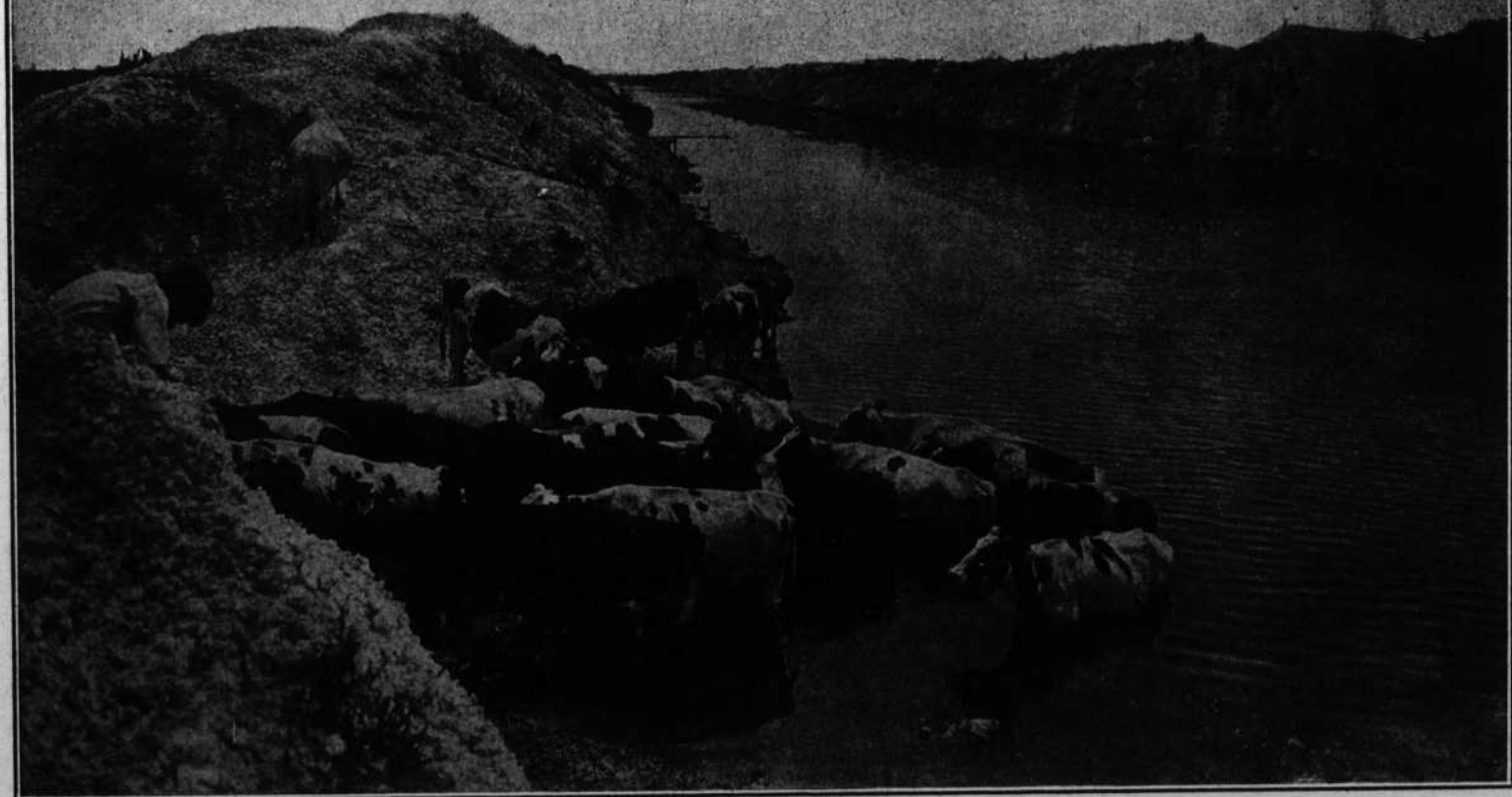
is toward the south is very slight, so slight that for all practical purposes this great limestone bed inside of the outer edges of the same may be considered as an immense level floor. More especially is this the case in the upper half of the Glades. This condition exists from the south shore of Lake Okeechobee eastward and westward to the edge of the Glades, and southward to a line drawn generally southwestward from Fort Lauderdale. Southwest from Fort Lauderdale, the flat slab rock formation, common to the upper Glades, begins to change and is replaced toward the south by the softer limestone. The rock floor maintains its generally level character, but is full of small pot holes, with sharp, jagged edges, very much like an immense honeycomb. This characteristic extends all the way from the line southwest of Fort Lauderdale to the southern extremity of the Glades, gradually dipping toward the sea until tidewater is reached in the proximity of the Thousand Islands and White Water Bay. To the southward also the soil undergoes a change from the predominating muck or peat to a soil commonly termed marl, which predominates in certain sections of the Southern Glades.

On this great limestone floor lies the soil of the Everglades, thicker at Lake Okeechobee, thinner at the edges of the Glades and toward the south. The soil resting on this level rock floor, being thick at the Lake and thin toward the south, gives to the surface of the Glades that gradual slope, which permitted the waters which overflowed from Lake Okeechobee and the waters from natural rainfall on the Glades, to gradually find their way, seeping through soil and meandering through sawgrass southward to the sea. But by far the greater portion of the water on the Glades passed into the air by evaporation and was in that way disposed of. At a few places along the eastern edge of the Glades, notably at New River and Miami River, the water broke through the rock rim of the Glades and made its way directly to the sea. Other portions of this water from the Glades made its way slowly and tediously through the entire length of the Glades to the sea at the southern extremity of the peninsula.

LAKE OKEECHOBEE.

Lake Okeechobee, the second largest body of fresh water wholly within the United States, is nearly circular in form, about thirty-two miles in diameter, and has an average depth of about fifteen feet. Its normal elevation, before drainage operations began, was twenty and one-half feet above the level of the sea, and through the varying seasons of the year fluctuated through a vertical range of about two and one-half feet between high water in the rainy season and low water in the dry season. The banks of the lake on southwest and south are low and marshy. On the north, east and west a low sand bank confines its waters. This lake is the catch basin receiving the runoff from a watershed to the northward about seven times its own size, finding inlet to the lake by numerous creeks and rivers, the principal of which, and by far the most important, being the Kissimmee River. During heavy rainy seasons an enormous quantity of water is discharged from this watershed into the lake, and continues in less amount during other seasons. Formerly, in its natural condition, when the lake became filled to overflowing, it discharged its water over the low shores on the south, adding its quota of water to that of local precipitation on the Glades, inundating this entire territory and subjecting the same to continual overflow. Flood waters escaped very slowly on account of the insignificant slope, lack of channels, and the obstruction to flow offered by the dense growth of vegetation.

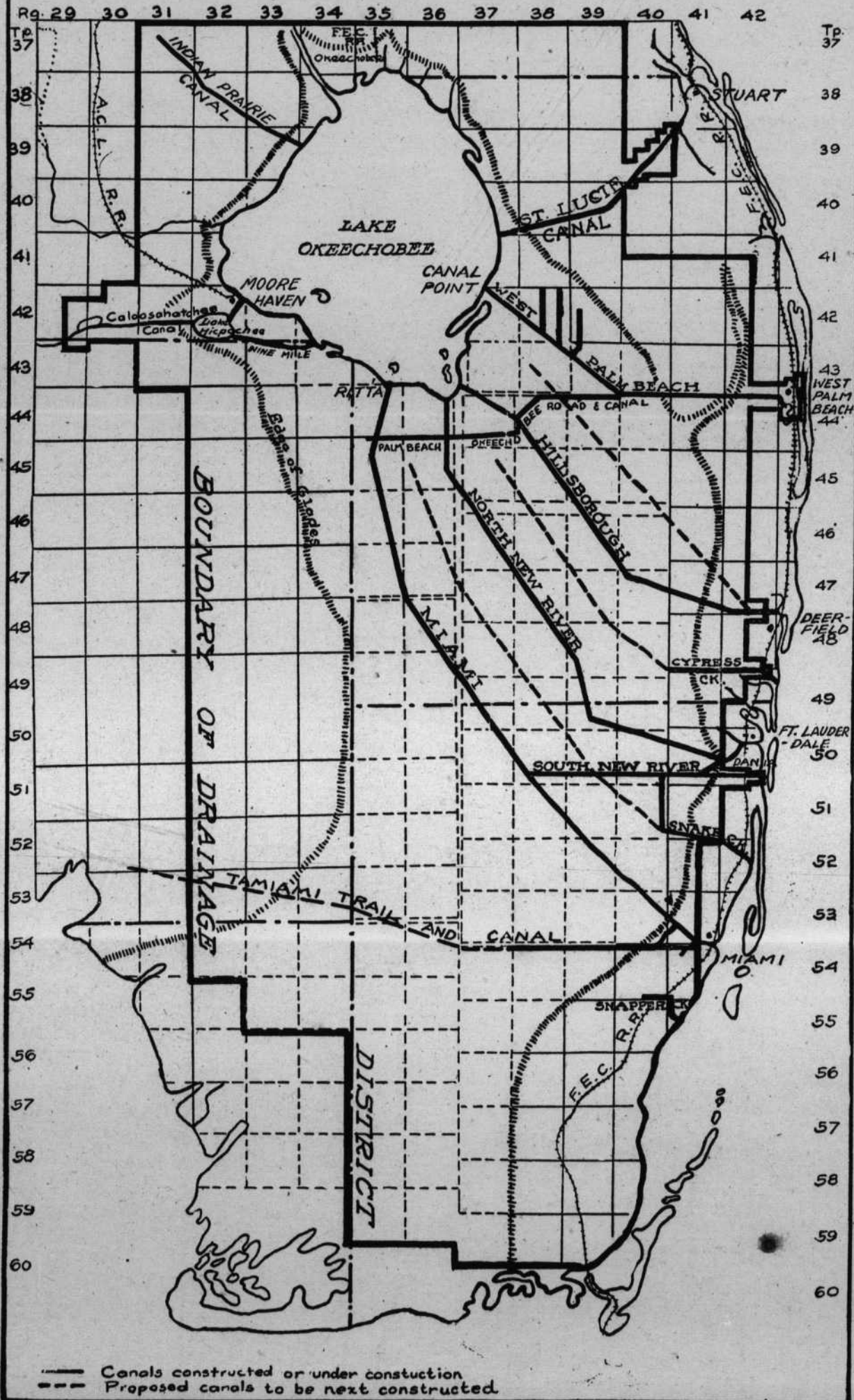
Lake Okeechobee is at once the greatest menace to the Glades area, and also one of the most valuable assets which the territory possesses. The successful drainage of the Everglades depends in large measure upon preventing the waters of the lake from overflowing and inundating the land to the southward, while the best interest of the project demands that the water be not unnecessarily wasted, but be properly conserved for its numerous valuable uses. The storage value of the Lake as a reservoir in which to store a portion of the flood waters from the northern watershed is of great value both in safety and economy of drainage to the District. Furthermore, Lake Okeechobee in time of need could supply from a depth of two feet of its storage, six inches depth of water for irrigation over an area of a million acres, allowing nearly one-half for wastage.



Cattle Raising in the Everglades.

EVERGLADES DRAINAGE DISTRICT

Issued by the Chief Drainage Engineer
Tallahassee, Fla., February 16, 1920



Lake Okeechobee is a navigable body of water held by the United States Government to be under its control and jurisdiction. The interest of the United States relates to navigation, and so important does it consider the matter of conserving its water and preserving its navigability that the War Department is ever watchful of this great inland waterway. Prior to the construction of drainage canals connecting Lake Okeechobee with the sea, the lake had no navigable outlet, nor connection by any sort of natural channel with the sea. As has already been stated, water flowed from the lake only in time of flood, and this occurred by spreading out broadly in a shallow sheet a few inches deep over the territory bordering on the south and southwest. The Lake, therefore, was an inland body of water confined entirely within the borders of the State, having no navigable connection with waters outside of the State or with waters leading to the sea. Through the construction of drainage canals there has resulted purely as an incident to drainage, such navigation as the drainage canals, by reason of their size, afforded.

Provision has been made to lower the level of the Lake about four feet. It is possible that this provision may require modification as the results of drainage become further manifested. There should remain a depth sufficient for navigation as far as this feature can be advantageously harmonized with drainage, but it is essential for flood protection that there be provided a safe margin within which the waters of the lake may fluctuate without overflow. The method of controlling Lake Okeechobee within safe levels will be briefly alluded to later on in describing the drainage plan.

THE DRAINAGE PLAN.

The waters which affect the Everglades are from two sources:

1. Water from the overflow of Lake Okeechobee.
2. Water from excess local rainfall on the Glades.

The lowering of Lake Okeechobee below the overflow level is one part of the drainage plan, and the removal of excess rainfall from the Glades is the other part of the plan.

The accomplishment of these two things constitute the principal part of the work of draining the Everglades.

The foregoing is being carried out, first, by constructing a large canal by the shortest feasible route from Lake Okeechobee to the Atlantic for the purpose of lowering the lake and bringing it under control, and, second, by building drainage canals proper through the Everglades connecting it with the sea for the purpose of carrying off the excess local rainfall. The Saint Lucie Canal, which is the principal unit of the Lake Control plan, extends from the Eastern side of Lake Okeechobee to the St. Lucie River, a distance of 25 miles. The canal will vary from 150 to 200 feet wide, will have a normal depth of flow of 10 to 12 feet, with greater depths during flood periods and less during dry periods. The greatest depth of cut is 28 feet. In addition to the control canal composing the principal canal unit for regulating the lake, certain of the drainage canals proper will be available part of the time for assisting in control. Regulation of water discharged through the control plan will be accomplished by controlling works located at the intake end and near the outfall end of the canal. As a further protection a substantial levee is proposed to be constructed around the low portions of lake shore, which will provide additional safety against the lake, and permit control of its waters within satisfactory limits.

The Everglades Drainage canals proper, composing the second part of the plan, vary in dimensions from 40 to 50 feet wide at their upper ends by a depth of 10 to 12 feet, generally increasing in width to 80 or 100 feet, and in depth to 12 or 15 feet at their lower end. Sizes of canals vary according to requirements of the area which the canal must serve. The accompanying map shows the general arrangement of the principal part of the major system for controlling Lake Okeechobee and for providing the main drainage outlets for the Everglades.

From an engineering standpoint the practicability of draining the Everglades has been determined by careful and thorough investigation of the conditions which control and govern the situation. The results which have become manifested through the partially completed plan, indicate to a certainty that the lands of the Everglades are susceptible of successful drainage, and there is no question of drainage when the complete reclamation plan shall have been put into execution.

The conditions existing, almost universally, in the Everglades permit drainage by means of canals operating under gravity. There is a comparatively narrow margin in the southern extremity of the Glades, which may ultimately require other drainage works than simple gravity canals, but the present scheme of drainage is not to attempt the complete reclamation of this class of land until a later date when need from the colonization standpoint, and demand for additional lands, justify the extending of the completed works into this territory. The elevation of surface above sea level and the distance from the sea are generally such that the canals which will be constructed will have a sufficient grade to give a good current for carrying off the water without making excessive cuts. Beginning at the edge of Lake Okeechobee the slope of the land toward the southward is nearly uniform at the rate of about three inches per mile. The bottom of the canals, which run southward from the Lake, will follow very closely this slope so that the depth of cut for the canals extending through the Glades generally from North to South, is nowhere excessive for obtaining a favorable depth of flow. This is of great value in the economical construction of the main canals, which traverse nearly the entire Glades from North to South. Also the water stage in the canals can be controlled by a few simple and economical Locks and Dams, which would not be the case if the Glades had uneven slopes, making necessary great numbers of controlling works.

In connection with main drainage canals, a system of controlling works is planned. By means of these controlling works it is intended to regulate water levels to the best possible advantage. Controlling works are required near the lake shore on each of the canals running outward from the Lake. These controlling works are advantageous for protective purposes against high water levels of the lake, and their location and arrangement for this service is given due consideration. One of these structures, consisting of a Lock and Movable Dam, has been constructed at the upper end of each canal leading outward from the lake, with the exception of one on Miami Canal, work on which is now in progress. Other controlling works are provided at intervals through the canals for carrying out a further regulation of water levels.

The controlling works for the St. Lucie Canal are for the purpose of regulating the discharge of water from Lake Okeechobee through this outlet. When the tendency of the Lake is to rise to undesirable levels, the gates at the dams will be opened to permit water to flow outward from the Lake, and as the Lake becomes lower, the dams will be regulated accordingly. In connection with the works constructed for regulating drainage levels, Locks are being provided for harmonizing the navigation feature, which is incidental to drainage. The Locks in the drainage canals proper, with the exception of three smaller ones first built, are 25 feet wide, 130 feet usable length, having normal depth over sills of three and one-half feet. The Locks on St. Lucie Canal will be thirty feet wide, 150 feet long, with a normal depth over sills of 6 feet. Three Locks constructed in the Caloosahatchee Canal have lengths of 140 feet, widths of 30 feet, and depths over sills at normal levels of 5 feet. By means of these Locks the navigation feature of the drainage canals will be developed as far as drainage considerations make the same feasible, it being understood that navigation is an incidental feature resulting from the size of canals constructed for drainage purposes, and that the principal function of the canal is drainage. The navigation feature is of great value in providing means of access to this region. At the present time the drainage canals furnish the only means of ingress and egress for the greater portion of this territory. Mention has been made of controlling works on the drainage canals at the edge of Lake Okeechobee. When these canals will be called upon to carry their full capacity of water from local rainfall on the Glades adjacent to them, they will be shut off from Lake Okeechobee by means of the controlling works at the upper end so that they will not be burdened by water from the Lake, and may thus be permitted to operate to their full capacity for removing local rainfall.

Such, briefly, is the main drainage plan for providing the major outlets and controlling works for the Everglades Drainage District. There is another class of drainage works commonly called lateral canals or farm ditches, which are essential for supplementing the main canals and for completing satisfactory drainage. This subject will be referred to in another place.



Dredging. Everglades Canal.

LAND SURVEYS.

The Everglades were a great unsurveyed territory. The grant from the United States to the State of Florida conveyed these lands as unsurveyed. In the early days the Government surveyors detailed for work in the territory adjacent to the Everglades did not attempt to penetrate this area. They confined their operations largely to the dry land and did not contemplate in their survey the great inundated area reported in their field-notes as impracticable and impenetrable marsh. In connection with the drainage work, a plan of surveys has been inaugurated, to include the Everglades lands. The principal base lines and guide meridians have been projected, over a million acres have been surveyed into townships, ranges and sections, and the task of subdividing this vast and hitherto unsurveyed area is being carried out as rapidly as is warranted, until in time it will be as easy to locate an acre of land in the Everglades as anywhere else in the State.

SOIL.

Everglades lands are essentially agricultural. Upon the assumption that the lands of the Everglades would become valuable for agricultural purposes when drained, rests the entire justification for drainage, entailing a great expenditure of time, labor, and money. Experiences thus far have supported the original belief in the agricultural value of these lands. Their natural fertility, adaptability to a large variety of crops, responsiveness to cultivation, economy of preparation, fertilization, cultivation, etc., and the high degree of immunity from freezing temperatures, make these lands especially valuable. Some of the crops successfully grown on drained lands in the Everglades are tomatoes, potatoes, peppers, beans, egg plants, onions, cabbage, cucumbers, strawberries, beets, lettuce, celery and other vegetables; sugar cane, corn, rice, alfalfa, kaffir corn, sorghum, millet, milo maize, many grasses and other staple crops; and fruits such as bananas, guavas, avacadoes, papayas, oranges, grape fruits, and limes. In few instances have lands been drained for a sufficient length of time to bring fruit trees into general bearing, but indications are that certain fruits adapted to this type of soil will become valuable assets to

general agricultural crops of the district. Considerable activity is being shown in hog raising, and in the growing of stock for both dairy and beef. This branch of agriculture is offering promise in the developments of these essential items of food supply.

The soil of the Everglades being composed chiefly of decayed vegetable matter, is highly nitrogenous. It is a rich, but not well balanced soil, and the application of mineral fertilizers, especially phosphoric acid and potash, have been found highly beneficial in increasing the yield, and improving the quality of the product.

An average of 34 representative soil samples taken from the Glades area, shows by chemical analysis the following content of plant food: Ammonia 3.1%, phosphoric acid 0.18%, potash 0.08%. It is not intended to convey the idea that there are no serious problems in connection with the Everglades. The special character of the soil, the general lack of experience on the part of new farmers in handling this type of land, lack of familiarity with drainage questions and other conditions, introduce problems which require careful study and well-advised effort to successfully overcome.

In the solution of farming problems above referred to, one of the most beneficial and important steps which could be taken would be the establishment of an experimental station under the direction of State and United States authorities, and by co-operating with the farmers themselves, work toward the solution of these problems. In fact, it being true that successful farming in the Everglades is the final and fundamental purpose of the drainage work, it is apparent that the success of the drainage enterprise depends on placing farming and cultivation of the land on a sound, profitable basis. As just stated, provision for an agricultural experimental station has not yet been made, but the importance which agricultural developments have attained, and the favorable attitude now being shown toward the establishment of a station, makes it probable that steps will be taken during the next Legislature toward providing an agricultural experimental station in the Everglades.

DEVELOPMENT.

Five main drainage canals connect Lake Okeechobee with tidewater and traverse the Glades. One of these has two branches. Three auxiliary canals have been constructed leading from the eastern edge of the Glades to the Atlantic. A main drainage canal is under construction leading northwest from the Lake for providing outlet to lands adjacent to it. The Caloosahatchee Canal is open connecting Lake Okeechobee with the Gulf by the Caloosahatchee River. The West Palm Beach Canal is in operation from the Lake to the Atlantic. The North New River Canal is open from Ft. Lauderdale, on New River, to Lake Okeechobee. The Miami Canal and its branch, the South New River Canal, are open from the Lake to the Atlantic. All of the above canals are not fully completed, and are not therefore discharging their full ultimate capacity. Waterways affording navigation of about three feet draft are open from Ft. Lauderdale and West Palm Beach to Lake Okeechobee, and connect via Lake Okeechobee with Moore Haven on the West side of the Lake at the head of Caloosahatchee Canal, extending thence West via the Canal and Caloosahatchee River to Ft. Myers, on the Gulf. The distance from Ft. Lauderdale and West Palm Beach to Lake Okeechobee is 61 and 42 miles, respectively. The distance across Lake Okeechobee to Moore Haven is approximately 35 miles, and from Moore Haven to Ft. Myers 70 miles. The St. Lucie Canal is open for 16 miles.

The Florida East Coast Railroad extends to Okeechobee, a town on Taylor Creek, about three miles from the north end of the Lake. Moore Haven on the west side of the Lake is the present terminal of a branch of the Atlantic Coast Line Railroad extending into the Glades area. These two railroad points afford the most direct railroad connection between the Everglades and northern points. The main line of Florida East Coast Railroad is crossed by the water ways leading outward from the Lake on the East and South, and thus affords additional railroad connection with the Everglades territory.

The total length of main canals now open in the Everglades is 361 miles. The total excavation in providing these canals amounts in round figures to 45,250,000 cubic yards of earth and rock. Twelve Locks with their accom-

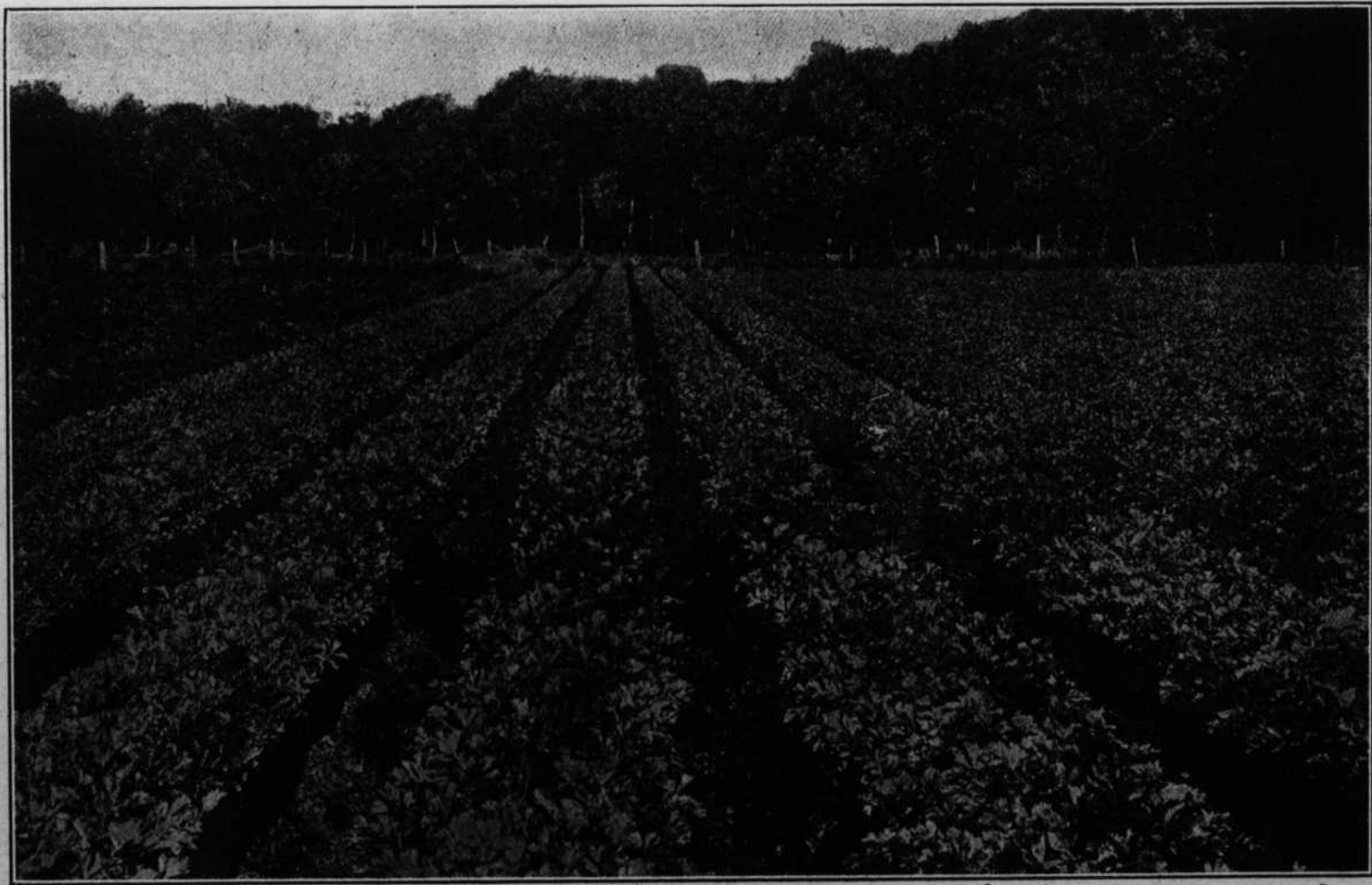
panying dams and controlling works have been constructed, and much other work, of less extensive though essential nature, has been accomplished. The total amount of money expended in main drainage works of every description up to the present time amounts, in round figures, to 6½ million dollars. The above represents a portion of the plan only. Construction of drainage works will be continued and advanced as conditions require and make practicable.

Drainage will not become thoroughly effective, and lands in the Glades will not be entirely safe against damage from overflow until the canal for controlling Lake Okeechobee shall have been completed, and until the main drainage canals traversing the Everglades are well on toward completion. The foregoing refers to the main drainage works. In addition to the main drainage works, there is necessary a complete secondary system consisting of laterals, farm ditches, etc., for supplementing the main system. The secondary system is not a part of the Drainage Board's plan. It will be referred to again for the purpose of calling attention to the necessity of these works, and the manner in which they can be provided.

In the beginning prior to the undertaking of the drainage project there were no human inhabitants in the Everglades, save a few bands of Indians who roamed the margin of the marsh, or an occasional hunter or trapper making his temporary abode there. Since the drainage project has been inaugurated, the population of the Everglades Drainage District has risen from an insignificant number to the estimated number, 20,000, and formerly where no habitation and no improved property existed, there may now be found in many localities, flourishing farms, thriving communities with school houses, churches, stores, hotels, telephones, telegraph, electric lights, water works, and other essentials and conveniences of advanced civilization.

SECONDARY DRAINAGE WORKS.

The foregoing description of canals, levees, drains and other works refers to the main drainage system being constructed by the Everglades Drainage District. The major system provides main outlets and principal works, which affect the great project as a whole. In addition to



Celery in Muck Land.



the main drainage works, there are certain other works secondary to the main system, but yet necessary and essential for complete and satisfactory drainage. This secondary system is made up of lateral canals, farm ditches, small levees where necessary, and other works of a like nature. The provision of the secondary system is not a part of the plan of the Drainage Board. These smaller works are left to be provided by the various individual localities to suit their needs and conveniences. The fact that the secondary system is not proposed to be provided by the Everglades Drainage District, but will be left for the farmers and land owners to carry out, warrants the laying of emphasis upon this feature of the Drainage work.

Without the secondary system the main canals can not serve their territory, floods can not be prevented, lands can not be properly drained, and the soil can not be successfully cultivated. No one would expect to get service from a sewer laid in the street until his premises had been piped and connected with the main. Neither can land be properly served by the main canal until the same is ditched and connected with such main.

The most important thing for the farmer to do in preparing for his first crop in the Everglades, is to look to ditching the land. No farmer should subject himself to the risk, even for one year, of losing his crop, his labor, and his money by failing to provide that which is absolutely essential to his protection and success. Prospective purchasers and farmers should acquaint themselves of conditions with respect to drainage, and not gamble with nature's agencies against needless odds. Nothing could be more unwise than the planting of crops on Everglades land until it has been thoroughly ditched, protected and connected with the main canal.

Conditions in the Everglades are such that a completely coordinated system of main canals and secondary ditches with their accompanying works are essential for satisfactory drainage.

Furthermore, in making preparation and in planning for the first year of planting, if the land is raw and never before tilled, careful thought should be given to crops offering the best return from the new soil. Too high expectation should not be placed for a money crop the first year. Ordinarily, three or four years are required in the

Everglades, precisely as elsewhere under similar conditions, for getting the land in shape physically, chemically, and biologically for maximum crop production. These desirable conditions can be hastened and facilitated by deep plowing, aeration, and the planting of initial crops suitable for improving and taming the new land.

With reference to the provisions of the secondary system, the construction of the lateral canals in those portions of the Glades ready to receive them, can best be carried out by organizing the territory, which is to have the lateral system installed, into a sub-drainage district under the Laws of Florida. The general drainage law, Chapter 6458, Acts of the Legislature of 1913, is applicable to the formation and operation of sub-drainage districts within the Everglades. Another method of forming sub-drainage districts is by special laws enacted by the Legislature applicable to the particular district in hand. Sub Districts organized and operating under both general and special laws are in existence. In both cases the operation of the subsidiary district is in harmony with the greater Everglades Drainage District, and the smaller districts are entitled to all the benefits, privileges, and advantages which may be conferred upon them by the main drainage works of the larger district.

CONCLUSION.

There are things which should be borne in mind by those expecting or planning to become interested in the Everglades, and also by those already operating or farming in this territory.

The drainage of the Everglades is no small undertaking. The reclamation of this entire district represents the recovery of an area, in round figures, 140 miles long by 65 miles wide, or larger than the States of Connecticut and Rhode Island combined.

In the drainage of this great prairie there is being developed the most valuable natural resource, hitherto dormant, which the State of Florida possesses. The Everglades Drainage project has for its object the ultimate changing of a hitherto worthless, watery waste into a land of happy homes, productive farms, and thriving communities.

The complete accomplishment of the drainage work must cover a considerable period of time. Even though it be physically possible from an engineering standpoint to complete the work in two or three years, yet there are considerations which must be borne in mind. Nature's processes are slow. Fundamental changes involving complete metamorphosis from water area to land area will be attended by consequences which must be carefully dealt with. Questions of colonization and settlement have important bearing upon the economic development of the project. The cost of constructing the canal system, though reasonable per acre, is large in the aggregate. This means a burden upon the land for drainage taxes. There would be no wisdom in immediately constructing canals at random all over the district. The resultant burden in money and taxes could not, in the early stages of the project, be borne, to say nothing of the great expense of maintaining the works constructed and lying idle awaiting settlement and cultivation of the land. It is proposed to advance the drainage work as lands are needed, as colonization warrants, as economic conditions make advisable, and as general considerations justify.

The Everglades must be seen and studied to be understood. The soil is quite different from farm land commonly met with in the United States. Opinions of persons who have never seen the Everglades should not be accepted until verified. Investigation of conditions in the Everglades should be made just as one would investigate the conditions of a business which he proposes to purchase, or an undertaking on which he plans to embark.

There are successes in the Everglades and there are failures. Every line of endeavor and every walk of life has both of the above. The new settler coming to this territory should make provision for two years, and preferably three, without having to depend too largely upon full remuneration from the soil during this breaking-in period. Very much better assurance of success will result if provision is made by which to get past this usually unprofitable term. After this, it is the judgment of those in authority that the farmer can expect as satisfactory returns from his efforts in the Everglades as anywhere else on earth.

The foregoing deals largely with the drainage aspect of the Everglades, with which this, the Engineering Department, has to do. The Agricultural Department of the State is conversant with the various conditions of farming in the Everglades, and information on this subject may be obtained from the above department. (The Commissioner of Agriculture has been left the treatment of the subject from the agricultural standpoint.)

F. C. ELLIOT,
Chief Drainage Engineer.

INSTRUCTIONS WITH REFERENCE TO SECURING STATE LANDS IN THE EVERGLADES.

UNITED STATES LANDS.

1. Only United States Lands are subject to homestead entry. For information about homestead lands, write the United States Land Office at Gainesville, Fla. The State of Florida has nothing whatever to do with homestead lands.
2. Photolithographic Township maps can be purchased of the Chief Drainage Engineer, Tallahassee, Fla.

STATE LANDS.

3. State Lands will not be reserved from sale for the benefit of any applicant. An application not accompanied with the full amount of purchase money does not give priority or secure the land.
4. We have no special information in this department showing the character of the State lands, or the amount and kind of timber on them. *Personal inspection is advised before purchasing.*
5. The better way to make a satisfactory purchase of any lands in this State would be to visit the State and go to the locality in which you may be interested, and you can, as a rule, secure information as to the character of the land from the Clerk of the Circuit Court or the Tax Collector or Tax Assessor of the County in which the land is located.
6. The following reserving clauses are embraced in the deeds issued for the State lands:

7. The right at any time to enter upon said lands and make or cause to be made and constructed thereon such canals, cuts, sluice ways, dikes and other works as may be deemed necessary and needful for the reclamation of said lands.

8. The right to the exclusive possession, occupation, use and enjoyment of a strip of land running across any of the State lands, of one hundred and thirty feet on each side of the center line of any canal, cut, sluice way or dike that may be made and constructed on any of said lands.

9. An undivided three-fourths interest in and title to all the phosphate, minerals and metals that are or may be in, on or under any of the State lands, with the privilege and right to mine and develop the same.

10. An undivided one-half interest in and title in and to an undivided one-half interest in all the petroleum that is, or may be in, on or under any of the State lands, with the privilege to mine and develop the same.

11. The Swamp and Overflowed Lands granted to the State under Act of Congress approved September 28, 1850, and the Internal Improvement Lands granted to the State under Act of Congress approved March 3, 1845, are irrevocably vested in five Trustees, to-wit:

12. The Governor, who is chairman of the board, the State Treasurer, the Attorney-General, the Comptroller and the Commissioner of Agriculture, and their successors in office, under Section 617 General Statutes of the State of Florida.

13. The School Lands granted to the State under Act of Congress of March 3, 1845, are vested in the State Board of Education, consisting of the Governor, who is chairman of the board, the Secretary of State, the Attorney-General, the State Treasurer and the State Superintendent of Public Instruction, under Sections 335 and 336, General Statutes of the State of Florida.

14. Under Acts of the Legislature of 1909-1911-1913, no sales of more than 320 acres of Land can be made, without first advertising the lands for thirty days in some newspaper published in the County or Counties where the said lands to be sold are situated, also such other papers as may be deemed advisable.

15. Therefore, should anyone wish to purchase more than 320 acres, the lands desired would have to be advertised. The land will not be advertised unless the party

desiring it will deposit a Certified Check payable to the State Treasurer, in the sum of 10% of the price he is willing to pay for the said lands, as a guarantee that he will pay, not exceeding \$15.00 for expenses of advertising and will submit a bid for the amount he is willing to pay, on the date bids for said land are to be considered by the Board. Should another party submit a higher bid and the land be awarded said party, the certified check of the unsuccessful bidder will be immediately returned, the successful bidder in that case paying the cost of advertising. The Board, in all cases, reserves the right to reject any and all bids.

16. As stated, however, the above requirements apply only to purchases of more than 320 acres.

17. A list of State lands in any special Townships will be sent to anyone who will write, *stating the number of acres desired, the locality in which he desires the lands and the very best price he will give per acre.*

18. *There are no fixed prices now on State lands*, and all offers for State lands are presented to the Board controlling the prices of the lands desired, and the applicant is advised of their action thereon. The State lands in the Everglades have been selling at from \$30 to \$175 per acre; other State lands from \$4 to \$25 per acre.

19. The original field notes of the United States Surveys of this State are in this office. The usual price of copies of same is 50 cents per section and \$8.00 to \$12.00 per township, which only pays for actual time taken up in making copies.

20. All inquiries, offers and remittances for State lands should be made direct to W. A. McRae, Commissioner of Agriculture.

CABBAGE-GROWING IN SOUTH FLORIDA

By J. PETERSEN, PH. D., *Miami, Florida.*

Tempted by the many advantages which farming in South Florida offers to the enterprising man, many people who are not sufficiently familiar with the peculiar conditions down here in raising ~~enrage~~ in raising crops. As a result farming is too often conducted in a haphazard way and the ensuing failures are charged to the country instead of to the grower's lack of knowledge.

The object of this article is to present to cabbage growers some suggestions which will aid them in increasing the yield and improving the quality of their crops, without any great increase in labor or expense.

Aiming at intensified farming based upon thorough investigation of crop requirements, we will take into consideration the peculiar soil and climatic conditions of South Florida and the possibilities of the market.

The writer gives the results of local experiments in fertilization, etc., but the reader is cautioned not to draw too general conclusions from observations based upon particular soil types and local conditions. Where conditions are different, the practices to be recommended may differ greatly. There are certain underlying principles, however, *which cannot be ignored.*

ADVANTAGES.

South Florida offers a number of advantages to the cabbage grower. No part of the peninsula is wholly free from frosts and freezes; but climatic conditions are especially favorable in the southern district. Protected by the current of warm air arising from the Gulf Stream on the East, and the warm waters of the Gulf of Mexico on the West, South Florida is in a trucking community highly favored by nature.

During recent years frosts have wiped out large portions of the tomato crop, causing heavy losses to farmers. Cabbage is not so susceptible to frost and even tender plants will survive a temperature of 20 degrees Fahren-

heit. The thermometer seldom reaches a point as low as this in the southern parts of the peninsula.

If soils are to be judged only by the plant food they contain, most soils of South Florida would not stand comparison with those of the North, but this defect is easily offset by using manures and commercial fertilizers. Soils of southern Florida, although not very retentive, are extremely responsive, and therefore exceedingly well adapted for raising cabbage.

South Florida, on account of these favorable climatic and soil conditions, is able to place the first spring cabbage on the market, and therefore has a decided advantage over any other section of the country.

Comparatively few insect pests menace the cabbage crop during the early part of the year, and the expense for insecticides is negligible.

The great markets of the North are near and may be reached in a few days.

SOILS

While cabbage will thrive on a wide range of soil types, from coarse sand to heavy clay, this crop succeeds best on clay loam which has liberal humus contents.

Heavy yields may be secured on sandy soils provided the season is not extremely dry and the ground well supplied with organic matter and commercial fertilizers, but as a rule cultivation of cabbage will not be found profitable on very poor land.

Growing cabbage should not be attempted on such soil until it is brought into a fertile state, by growing a leguminous cover crop and the application of fertilizers. Sandy soils are more easily cultivated, but in order to retain moisture, have to be gone over more frequently and the fertilizer bill will be heavier than on clay and marl soils.

Poor soils dwarf the cabbage plants to half their normal size and of course, a small plant cannot bear a big head. The yield of marketable heads stands in direct proportion to the fertility of the soil.

The East Coast Prairie Belt, extending, with some interruptions, from Palm Beach to Florida City, seems to be particularly well adapted to cabbage growing, as the

marl in its virgin state is fairly fertile and top soil and sub-soil are well supplied with moisture throughout the growing season. Last year, about one thousand acres in the vicinity of Florida City alone were planted to cabbage.

PREPARING THE SOIL

The preparation of the soil for planting cabbage should begin soon after the preceding crop is harvested and not just before the plants are set. Careful preparation of the ground is half the battle and insures success. If the field is covered with rank vegetation it should be mowed. No doubt the quickest, easiest way to get rid of the weeds covering the field would be to burn them, but this is a most objectionable practice, since fire destroys the organic matter so essential to the well being of the plants. After the vegetation has been dried for a few days it should be plowed under and the land thoroughly broken and pulverized. In most cases shallow plowing will be best.

Deep plowing is not advisable shortly before the cabbage is planted since the loosening of the soil facilitates the loss of moisture, but it may be of decided advantage to heavy soil when done some time before planting.

THE VALUE OF HUMUS

Most of our soils are distinctly deficient in humus. This fact is partly due to natural agencies—the continuous process of oxidation—a high range of temperature very favorable to bacterial action. In addition to this, vast quantities of humus are destroyed by fires started purposely or accidentally.

Where the humus contents decrease, the soil invariably becomes less retentive of moisture and plant food, inferior in physical qualities and less productive.

If more attention were given to maintaining the humus supply less artificial fertilizer would be required and the soil would be more productive.

Humus not only adds actual plant food to the soil and favorably influences bacterial activity, but also promotes the availability of certain soil constituents, such as phos-

phoric acid and potash. It improves the texture of the soil and increases its water-holding capacity.

Humus may be furnished by manures and green vegetation.

COVER CROP

The most economical way to increase the humus contents of the soil is to raise a cover crop during the summer months previous to the season when the cabbage is to be grown.

A cover crop not only furnishes to the soil humus so indispensable to the promotion of bacterial life, but it also protects the soil from washing out, thus preventing the carrying away of soluble plant food. A soil covered with dense vegetation is made more absorbent.

The cover crop when decaying furnishes vegetable matter to the soil and improves its physical condition. It catches the nitrates that were not utilized by the preceding crop and that otherwise would leach down to the subsoil. The nitrates are absorbed by the cover crop and converted into such chemical forms as will be retained by the soil until the succeeding crop can use them.

Deep-rooted plants such as velvet beans and other legumes penetrate far into the subsoil. In decaying they produce humus canals through which the rainwater can pass to the subsoil, where it is held until by capillary attraction it is drawn back to the top soil as needed by the growing crops.

In addition to this the roots of the legumes such as velvet beans, beggar weed, cowpeas, etc., possess nodules, containing bacteria that convert the nitrogen from the air into ammonia, thus saving this most expensive ingredient in fertilizer.

MOISTURE

Cabbage requires for its growth a comparatively large amount of moisture. The retention of the moisture supply is indeed the key to profitable cabbage culture. It thrives best on soils which are naturally moist, but not wet.

Too often the failures in growing cabbage are due to insufficient quantities of available moisture. To some extent the farmer is able to increase the absorbing power of his soil.

The moisture of a soil is affected by its natural physical make up, by drainage conditions, the amount of humus present and the methods of cultivation exercised before and during the growing season.

The Prairie Belt is usually underlaid with heavy clay, often so compact that it turns off the water like a roof preventing it going to greater depths. Such subsoils should be made more permeable. This may be done by growing legumes.

The cabbage field should be well drained and no standing water be allowed, for this excludes the air, thus preventing the oxidizing process. Cabbage plants on wet soils make very little progress. The leaves soon turn yellow and wilt.

On the other hand, a plentiful supply of moisture during the growing period is essential to fill the cell walls of the leaves with water. If the moisture supply be deficient during the early period of growth, the plants do not develop quickly enough to produce tender leaves. They remain small, and the plants look stunted. If there be an inadequate supply of moisture later, a few heads may form, but they will lack firmness.

After soil and subsoil have become well supplied with rainwater the next important step is to conserve the moisture and to keep it within reach of the growing crop. Sunshine and wind cause the moisture that has risen to the surface to evaporate. Methods should be employed that will reduce this loss to a minimum.

If the cabbage field be stirred by cultivation the pulverized soil will form a mulch and prevent the moisture from below rising any further. This "dust-mulch" will disarrange the soil particles so that the capillary tubes through which the water rises to the top will be broken. After rain it will be necessary to cultivate again in order to make the mulch again effective.

With a view of maintaining as large a water reservoir as possible, it is of the greatest importance to keep the subsoil in good physical condition. In order to be able to absorb the water falling during heavy rains the soil must be porous and loose. This is especially true on heavy soils, in which frequently the subsoil is dry to a depth of several feet, while at the same time standing water may be observed on the surface.

Here again humus is a useful servant making sandy soils more binding and heavy soils looser.

PURCHASING POOR SEED IS POOR POLICY

In growing a seed bed it is of utmost importance to obtain good seed. No matter how carefully the farmer prepares the soil, no matter how much money he spends for labor and fertilizer, if a part or all of the seed fails to come up it has to be re-seeded and time and money are lost.

Seed that contains no living germ is useless. It is essential to keep it in a dry place, otherwise molds will destroy its vitality or it will begin to sprout prematurely, later drying out. Seed should be bought from reliable dealers, not where it is offered cheapest. No use paying good money for trash composed of seed that will not germinate and weeds that will bring forth their own kind, but no cabbage.

All seed should be tested for purity and germination. Good cabbage seed should show a germination of 95 per cent., and more than half of it should germinate within three days.

Germination depends upon a proper supply of heat and moisture. If it be desired to force germination sandy, top soil with a goodly supply of humus will do best. At a temperature of 77 degrees Fahrenheit seed will germinate in twenty-four hours.

Before planting, the seed should be disinfected by dipping it a few minutes in a 1:1000 solution of corrosive sublimate.

Moisture is as important as heat and a certain amount of it has to be absorbed by the seed before it can sprout. The seed bed should be kept moist but no standing water allowed, otherwise the seed will rot. The soil should be in such physical condition as to afford free access to the air and easy egress to the noxious gases given off during the germinating process.

If fertilizer is used in the seed bed it is desirable to apply it a week before sowing so that it may become incorporated with the soil and thoroughly decomposed before coming in contact with the germinating seedlings. Artificial fertilizer will not be so beneficial as well rotted manure distributed evenly through the seed bed. An over-supply of quickly available nitrogen—such as nitrate of Soda—has a tendency to produce plants that are too tender. Artificially forced leaves wilt in transplanting and the growth of the plants is checked.

It is of prime importance to have vigorous plants that are free from disease. Seed beds should be prepared in a new place every year, otherwise fungus diseases will rapidly multiply and diminish production.

It is best to prepare the seed bed in the open field. Thorough and repeated cultivation of the seed bed is important.

It is preferable to sow the seed in drills four inches apart about three-quarters of an inch deep and so thinly that stocky plants are produced. One quarter of a pound of good seed under normal conditions will supply enough plants to set one acre.

The seed-bed can easily be protected against frost, but it is advisable to sow an additional seed-bed every ten days. Farmers that have followed this policy have made quite a lot of money. After frost or other injury they were able to immediately plant over the field, while others had to wait until the plants were ready.

An application of tobacco dust given every four or five days will drive off lice and thrips. It is also good practice to spray the young plants with bordeaux mixture.

TRANSPLANTING

About thirty days after the seed is sown the plants are ready for setting in the field. The best planting time is South Florida is November and December. Later cabbage sometimes fails to head. A field planted early escapes attacks of various insect pests and bacterial diseases, while later plantings often suffer severely.

The plants should be dug carefully and the tops dipped in a solution consisting of Bordeaux mixture, arsenate of lead and nicotine sulphate.

In warm weather it is advisable to prune off some of the leaves in order to check evaporation.

The cabbage plants are usually set in rows three feet apart. The distance in the rows depends upon the variety. Jersey Wakefield needs a space of fifteen inches between the plants, Charleston Wakefield, twenty inches, and Early Dutch, twenty-four inches.

CULTIVATION

No other crop responds so quickly to cultivation and food supply. The most successful cabbage farmer realizes the importance of thorough cultivation soon after the plants have been set out.

The object of cultivating is to destroy all competing weeds, to improve the physical condition of the soil and to raise the moisture contents. No weeds or crusted soil should be allowed in the cabbage field. Shallow cultivation is preferable and it should be done in such a way as to avoid breaking the roots.

Even in the middle of the rows the soil should not be cultivated deeper than four inches. A dust mulch two inches in thickness should be maintained covering the surface of the whole field. During heavy rains more frequent cultivation is advisable in order to prevent the surface soil from running together and crusting. If the ground is allowed to become dry and hard the development of the plants will be checked, and no degree of later good treatment will make amends.

Another object in cultivating the soil around the plants is to make it porous in order to allow the carbonic acid gas which is generated by the growing plant to escape into the air, otherwise, like other noxious gases, it will check growth.

Cultivation influences favorably the capillary movement, i. e., the drawing of moisture from subsoil to the upper layers. Expenses may be curtailed by the intelligent use of plows, cultivators and fertilizer distributors of the new type.

ROTATION

No field will raise good cabbage year after year. The continuous growing of cabbage on the same field not only depletes the soil of nature's stores of plant food, including humus, but also causes the accumulation of certain acids, toxic to the plants, which decreases production.

In order to maintain the highest state of productiveness a system should be practised which alternates humus-producing, with humus-consuming crops.

FERTILIZERS

The soils of South Florida do not contain a sufficiency of the chemical elements essential to the growth of crops. This fact is largely due to climatic conditions. During the heavy summer rains the soluble constituents which accumulated in the soil are quickly washed out. This is especially true where the vegetation is scanty.

It is of some interest to note that some of our soils in South Florida in their virgin state analyze as low as .004% Potash; .24% of Phosphoric Acid; and .1666% of Nitrogen.

Manures and commercial fertilizers are added to the soil to replace plantfood that was taken up by previous crops or removed in solution by rainwater passing through the soil.

Stable manure is an unbalanced plant food, especially lacking in Potash. In order to bring the best results it must be balanced by commercial fertilizers.

There is hardly any danger of making the soil too rich. It pays well to force the crop by heavy side dressings.

There is no such thing as a "Cabbage Fertilizer" adapted to meet all conditions.

The cabbage plants have means of letting us know whether they are hungry for certain food and the observant farmer will not be satisfied to use fertilizer on hearsay evidence. By studying the changing appearance of the crop he will be able to some extent to determine which element has to be supplemented.

The qualities and formulas to be used most advantageously depend upon a number of conditions such as crop requirements, soil fertility, physical and biological conditions of the soil, methods of cultivation, and previous fertilizing, and since these conditions may vary greatly the necessity of applying individual formulas is easily comprehended.

Before selecting the ingredients from which to compound the fertilizer it is also essential to determine if and to what extent the soil is acid.

Certain sources of fertilizer cannot be used profitably on acid soils while others tend to correct acidity harmful to growing cabbage plants.

The cabbage plant as a whole is a unit, though the different elements of plant food perform certain definite

functions in its development. To the cabbage crop they are of equal importance and all must be present in sufficient quantities to secure symmetrical and well balanced plants. If one element be lacking in the soil, it cannot be replaced by another one, no matter in what quantity the latter may be present.

Since it is important for the plants to make a continuous growth they should find in the soil an abundant supply of available plant food.

Potash, nitrogen, phosphoric acid and sometimes lime are the most essential elements that must be present in the soil, either in soluble form, or in such combinations as to be readily absorbed by the roots.

POTASH

Shortly after the outbreak of the war manufacturers of commercial fertilizer were confronted with a serious shortage of potash, and when the price of this essential fertilizer constituent rose higher and higher formulas changed gradually. While in 1913 a certain fertilizer concern considered 10% of potash absolutely essential for growing cabbage, its catalogue for 1916 showed only 3% of potash (in cabbage fertilizer) and in 1918 the same concern advocated the use of no potash at all.

In order to ascertain the influence of potash on cabbage production the writer conducted a series of experiments on the Cutler Prairie. All plots received the same soil treatment, the same amount of manure, and the same number of plants—Charleston Wakefield—were planted with equal care and on the same date.

The commercial fertilizer applied to all plots in equal amounts analyzed 4% Ammonia, 8% Phosphoric Acid.

The check plot received no potash; plot No. 2, 1%; Plot No. 3, 3%; Plot No. 4, 5%; and No. 6 8% of actual potash sold by the German Kali Syndicate.

The yield from one acre, no potash plot was 6,218 pounds of cabbage; from the 1% potash plot, 10,412 pounds; from the 3% potash plot 13,136 pounds; from the 5% potash plot 14,808 pounds; and from the 8% potash plot 15,812 pounds.

The cabbage was sold at 2 cents per pound f. o. b. field, and the different plots brought following returns:

Plot No. 1, no potash.....	\$ 124.36
Plot No. 2, 1% potash.....	208.24
Plot No. 3, 3% potash.....	262.72
Plot No. 4, 5% potash.....	296.16
Plot No. 5, 8% potash.....	316.24

Deducting the actual cost of the potash from the increased returns we find: 1% potash yielded a net profit of \$80.38 over the non-potash plot. The use of 3% potash caused a net gain of \$129.36, 5% potash \$156.80 8% potash \$167.88.

In considering the experiments it has to be remembered that the price of cabbage was rather low while the price of potash during the war was abnormally high.

That the quality of the cabbage was largely influenced by the percentage of potash was proven by the following facts:

Cabbage raised on the non-potash plot wilted after ten days and after twenty-two days was unfit for eating. The cabbage heads raised on the 5% potash plot wilted after twenty-four days and were still edible after forty-eight days.

Here are some of the reasons why potash affects cabbage yields to such an extent:

Potash is essential to the formation and translocation of starch and its conversion into sugar.

It influences favorably the area of the leaf and root systems at the same time making the leaves thicker, heavier, and firmer, thus reducing the number of culls.

Potash makes the cabbage more resistant to insects and bacterial diseases and improves the shipping qualities.

The above experiments indicate clearly that potash is a dominant food requirement in growing cabbage and the farmer should make sure that the fertilizer which he buys for this crop contain sufficient quantities of this element.

INJURIOUS EFFECTS OF BORAX IN POTASH

When the import of German potash ceased, a number of potash sources were opened in this country.

While some of them were excellent quality, the potash obtained from certain salt deposits, such as Searles Lake,

California, contained considerable amounts of borax, in some instances as high as 20%.

Borax is harmful in germination. No fertilizer containing potash in combination with borax should be used on the seed bed. Some of the ill effects of borax are: Bleaching of the outer leaves, spindly stems, stunted appearance, materially decreased yields.

Borax when present in even small quantities will exert a toxic influence on the cabbage. Farmers should be sure to use no potash that contains borax.

AMMONIA

Nitrogenous substances greatly increase the bulk of the crop.

Ammonia will induce rapid succulent growth producing tender leaves, but an oversupply will make the plants more susceptible to frost.

Ammonia deepens the color of the foliage, causing the outside leaves of the cabbage to become a darker green and the heart leaves to become more white.

Growing and plowing under of a leguminous cover crop is one of the most effective means of furnishing nitrogen to the soil. This is of special interest to the farmer since the price of Ammonia in commercial fertilizers is exorbitantly high. Aided by nitrifying bacteria the legumes, such as Velvet Beans, Peas, Beans, Cowpeas, Beggarweed, etc., fix the nitrogen from the air and store it in the soil available for the plants.

If previous to planting cabbage, cover crops have been grown on the field and the resulting humus contents properly incorporated into the soil it will be economical to apply a lower percentage of Ammonia.

Nitrate of Soda, Dried Blood, Tankage, and sometimes Sulphate of Ammonia are good sources of nitrogen to be used on cabbage.

The development of the cabbage may be greatly stimulated by applying as a side dressing a small quantity of Nitrate of Soda or other material that carries the nitrogen in quickly available forms.

Nitrate of Soda dissolves in water almost immediately and becomes at once available to the growing plants. It is a valuable source of nutriment for giving the plants

a quick start, but it leaches out very quickly and should be supplemented by nitrogen sources of organic nature.

If the soil is acid, sulphate of ammonia is not a desirable source of nitrogen for cabbage. Sulphate of Ammonia under certain conditions has a highly toxic effect on cabbage, sometimes prohibiting the successful raising of this crop. If chemical analysis proves the existence of such conditions this source of Ammonia should be avoided. Excessive amounts of Sulphate of Ammonia may create or add to acidic conditions in the soil, thus causing the suspension of activity of beneficial bacteria, besides giving rise to the growth of fungi and molds, and such types of bacteria as are detrimental to the cabbage.

Where the soil is acid it is best to use nitrogenous materials of a basic nature such as nitrate of lime.

Peruvian Guano also gives excellent results on the cabbage field.

PHOSPHORIC ACID

Phosphoric acid stimulates rapid growth, both of roots and tops. It brings about earlier and more perfect maturity. Cabbage well supplied with Phosphoric Acid is more resistant to frost damage.

Phosphoric Acid produces hard heads of cabbage. It enables the plant to resist the attacks of insect pests and to outgrow the weeds.

Phosphoric Acid exercises a very important influence in increasing the availability of other soil constituents and stimulates the activity of nitrogen fixing bacteria.

Without going into details of investigations carried on with different fertilizer sources it may be stated briefly that on the Prairie Belt masic slag and bone meal give better results on cabbage than Acid Phosphate. This is probably due to the presence of free lime, which counteracts to some extent the effects of soil acidity.

LIMING THE CABBAGE FIELD

The application of lime is an important matter on most cabbage fields and will greatly improve the mechanical condition of the soil.

Experiments have proven that plants with a great leaf surface require for the normal development a comparatively large quantity of lime.

If the chemical analysis of the cabbage field shows a deficiency in this element a liberal application of lime or of finely ground raw phosphate will be of advantage.

RECAPITULATION

South Florida is well adapted for the raising of cabbage. Cabbage is a money maker if market conditions are right. If cabbage fails to make a good crop it is due to carelessness in treating seed and seed bed, lack of proper cultivation, neglect in supplying the soil with humus, selection of a wrong fertilizer, or failure to fertilize sufficiently.

ROSELLE, THE FLORIDA CRANBERRY

(Written for the Florida Grower by Sarah W. Partridge,
State Dem. Agent, Tallahassee.)

Roselle is a tropical plant native to India. Wester in Farmers' Bulletin No. 307, gives a great deal of interesting information concerning this unique product. He believes it is cultivated in Australia more extensively than in any other part of the world. It is supposed to have been brought from its native soil to the West Indies some time before 1855, for it is mentioned in literature of about that date as occurring in these islands, and known as "red sorrel." The term "Jamaica Sorrel," often used in Florida, would indicate that the plant had been introduced here from Jamaica. The name itself is believed to be a corruption of "oseille," which is the French word equivalent to the English "sorrel."

In India the plant is cultivated for its fiber. Its most important relative botanically is cotton, although it is a near relative of okra. The plant is an annual and as usually planted grows to a height of from five to seven feet. The stems are reddish in color and branch profusely. It is very sensitive to frost and can be grown only in the tropical and sub-tropical climates. The edible portion is the large fleshy calyx. The blossom fades within one day and the calyces are ready for picking about three weeks after the bloom appears. There are some latent buds on the stems, and if the calyces are picked as soon as they are full grown these buds develop. In this way the close of the roselle season may be extended from December to well into February, provided, of course, that there are no frosts.

The chemical analyses given in the above mentioned bulletin show roselle to be very similar in composition to the cranberry, the most important difference being that the cranberry contains benzoic acid and roselle does not. Roselle makes a jelly and a sauce very similar in color, texture and flavor to cranberries. Some studies on the cookery of roselle undertaken in the Research Laboratory of the Home Demonstration Division at Florida State College for Women, were interfered with this year be-

cause the frost destroyed the available supply of the fresh product. In the light of the results of the limited work done the following recommendations concerning its cookery are made:

Remove the seed pod before cooking, as it will give, if left in, a slightly less agreeable flavor and texture to the sauce. The pod is easily forced out by cutting off the stem end of the calyx where it is joined to the pod and pressing gently with the fingers.

About ten minutes boiling gives a tender product. If the roselle is to be served as a sauce, use equal measures of the calyces and of water, cook until tender, sweeten to taste and allow the sauce to come again to the boiling point in order to be certain that all the sugar is dissolved. The sauce may be rubbed through a coarse sieve and the sugar added to the strained product. This gives a very excellent imitation of strained cranberry sauce.

Roselle makes a beautiful jelly of a very tender texture. The jellying point seems to be easily lost by overcooking and the jelly must, therefore, be removed promptly from the fire when the jellying point has been reached. The limited laboratory test indicates that the best jelly is obtained at 106 deg. C. (222 deg. F.). Two measures of water for one of calyces is the proportion used for making the extraction. After boiling ten minutes, cover and allow the roselle to cool before straining. Unless the jelly is to be shipped additional pectin need not be added. Use a low jelly glass if the product is to be removed for serving. Jelly may be made from the dried product, but this does not make a tender sauce after it has been kept for a long time.

The following recipes were copied from the book entitled "How to Use Hawaiian Fruit and Food Products," by Agnes B. Alexander:

Roselle Marmalade, 1.—Take the pulp left from the jelly. Add a little water if too thick and an equal measure or more of sugar, if a solid marmalade is desired. Cook over an asbestos mat until it thickens.

Roselle Marmalade, 2.—Cook three pounds roselle calyces in two cups water for one hour. Measure and add one and a half cups sugar to each cup fruit. Stir or cook over mat until thick.

BY-PRODUCTS OF FLORIDA FRUITS OTHER THAN CITRUS

By SARAH W. PARTRIDGE, State Home Demonstration Agent.

The food propaganda of the world war so closely link the two words production and conservation that to speak one is to recall the other. It were well if their practice was so closely linked. The first method, and frequently the only one that the agriculturist seeks to practice for the conservation of the fruit of his toil is successful marketing. Certainly this is the most important one. But not infrequently in the culls discarded at the packing house lie potential values which if developed, would affect materially the figures in the profit columns of the grower.

Of such importance is the citrus by-products industry that it has been assigned a place all its own on the evening's program. But "lest we forget," in the face of this big industry, that there are other rich and varied sources for fruit products in Florida, the third topic assigned is by-products of Florida fruits other than citrus. To name these fruits "other than citrus," is like reading the report of the good spies of Israel who when sent out by Moses to spy out the promised land brought back with them all manner of fruits and reported that, though there were giants there, it was a good land in which to live, "a land that floweth with milk and honey."

To name our fruits other than citrus that may made into fruit products suggests that Florida too, with its great variety of fruits, easily produced, is a good land in which to live. We have plums, peaches, pears, loquats, melons, mayhaws, mulberries, mangoes, guavas, persimmons, pineapples, papayas, carrissa, crabapples, cherries, strawberries, blueberries, blackberries, figs, pomegranates, and grapes. Such an array silences the suggestion sometimes made that there are so few fruits in Florida that may be preserved. To fetch these for the orchard or grove, is to challenge the skill of that modern alchemist, the housewife, whose manipulations enmesh in her products the delicacies of the rare fruit flavors,

and break the rays of the sunlight into their prismatic colors to sparkle in her jellies, preserves and marmalades.

If in any section of this State we have not many fruits to preserve, it is because the giant of indifference has not been overcome, for while eight of the twenty-four varieties named are found growing in an uncultivated state in various sections of Florida, all are better for special planting and a bit of care. If and additional stimulus to planting fruit be needed other than the fact that it pleases the eye and palate, its value in the diet would prove that stimulus.

Fruit should not not be regarded as a luxurious accessory to the diet, but recognized as belonging to a class of foods containing elements essential to proper nutrition. Its use would add to the delight and wholesomeness of the diet whether served in a fresh state or preserved. When home grown its consumption reduces the high cost of living. The preservation of a number of the varieties named could be developed as commercial enterprises.

To help supply this need for fruit for home consumption, we have undertaken the development of small home orchards as one of the projects for girls and women of home demonstration clubs. These plantings are small, frequently not more than ten or twenty trees. Recent reports from our agents, however, show plantings under their supervision in practically every county in which we work. The agent in Madison has the greatest number to her credit, showing 1,810 trees. One of her club girls is developing a small orchard that now contains nearly 100 fruit trees. The planting of Thomas grapes has been stressed and one hundred club members have made such planting, but the plantings in the home orchard have not been confined to these.

The products that can be made from Florida fruits other than citrus are more numerous than are those fruits themselves, as each may be preserved in a number of ways.

The following are among the products most frequently found in the thrifty housewife's pantry: Jellies, jams, butters, pastes, preserves, marmalades, sweet pickles, mincemeat, conserves, catsups, confections, flavorings, fruit juices, vinegars and were it prior to the good old days of prohibition we might add wines.

In selecting fruit for canning or preserving, it should be remembered that the best quality of fruit gives the best finished product. Fruit is at its best when ripe and well flavored. Culls are frequently used. This does not mean fruit in a decaying state, but misshaped, undersized, or otherwise disqualified for shipment. Should the fruit to be used show signs of decay, every part affected should be cut out and discarded. Fruit in such condition gives a more satisfactory product when made into fruit butter, or jam than when preserved or canned.

A preserved fruit is one which has been cooked in syrup until clear, tender and transparent. It should keep its form and plumpness, being neither tough nor soft. When finished the cells of the fruit should be filled with the syrup used.

Of the small fruits named best adapted to preserving without cutting into sections are figs, plums and crab-apples.

The uncooked fruit should never be dropped into a dense syrup for the juice of the fruit will be drawn out so rapidly by the heavy liquid that the fruit will shrink, and the contracting pores make a toughened surface which the outer coating of heavy syrup will find difficult to penetrate.

Most preserves should be started in a syrup testing 30° to 40° Brix. The exception to this is in the case of such juicy fruits as berries. These contain a sufficiently large percent of water to dilute the sugar syrup and make a light weight syrup. Preserves are usually finished in a syrup testing 45° Brix. to 55° Brix. or 105½° C, to 106½° C; or 222° to 224° F.

Rapid cooking gives a product light in color. The fruit should be covered with syrup during the process, as exposed surfaces toughen and shrivel. Should the syrup become dense too rapidly it should be reduced by the addition of water. Cooking should be continued until a sufficient amount of syrup has penetrated to give a plump transparent product.

If the vessel in which the preserves are cooked is covered just before removal from the flame, it removes the weight of the air and the fruit quickly fills with syrup. Allowed to stand under cover for 45 minutes or until sufficiently cool to retain the syrup then packed in sterilized jars, the fruit remains plump, and will not float. A sec-



Tomato Field on Marl Prairie Land, in Dade County, near Larkin. Model
Land Company.

ond method of plumping is to allow the fruit to lie in shallow trays covered with syrup for 12 hours, then pack, process for fifteen minutes and seal.

Fruits such as peaches, pears, guavas, mangoes, pineapples and melon rind that are usually cut in sections for convenience are preserved as the small fruits are.

A surplus of syrup should be strained and bottled to be used in fruit punches.

Fruits suitable for preserving may be candied. In candying fruits they are prepared as for preserving and the cooking is usually done on the installment plan.

The process is slow and tedious. A short period of cooking, ten or fifteen minutes each day is given, and the fruit allowed to stand over night to absorb the syrup. The process is repeated until all of the water is drawn out and replaced by the syrup. The fruit slowly plumps. When bright and transparent it is lifted from the syrup and dried in the sun. Some fruits prepared for immediate use are candied through uninterrupted cooking until the candied stage has been reached.

The following paragraph from Bulletin 18, Florida State College for Women, in regard to the selection of fruit for jelly making is of interest: "An analysis of jelly shows it to be composed of pectin, acid, sugar, ash and the fruit flavor extracted from the fruit used in the making of the jelly. The ideal fruits for jelly making are those which contain both acid and pectin. Sometimes fruits rich in pectin do not contain acid enough and will not make jelly unless acid is added. For instance, some varieties of guavas are rich in pectin, but need an addition of acid to make it possible to obtain a good jelly, while other varieties contain both pectin and acid in sufficient amounts. Jelly may be made from the juice extracted from such fruits by the addition of sugar and a proper concentration of the expressed juice by boiling. Fruit which is sound, and not over-ripe, is most satisfactory for making jelly. It should be used as soon after picking as possible, for it deteriorates in flavor upon standing, and loses some of its jelling power. Some fruits are richer in pectin when under-ripe. In making jelly from such fruits and addition of a small portion of this under-ripe fruit to the ripe will often furnish the necessary acid and pectin. The finest fruit flavor, however, is found in the ripe fruit. Where

the ripe and under-ripe fruit is combined, the proportion should be such that the flavor is not affected by the under-ripe fruit used."

Among the Florida fruits possessing acid and pectin in sufficient quantity for jelly making are the loquat, plum, some varieties of guavas, roselle, crabapples, grapes, car-rissa, and mulberries when under-ripe.

A valuable aid in determining when a juice contains a sufficient amount of pectin is the alcohol test. Boil together fruit and water. Strain a portion of the extraction. To one teaspoon of the extraction, add a teaspoon of alcohol (95% grain preferred) mix by gently shaking then pour slowly from the glass. If the precipitated pectin is in a solid clot, resembling the white of a freshly laid egg it is safe to add a volume of sugar to each volume of juice taken in making jelly. If the clot is broken the amount of sugar should be decreased. If no pectin precipitate occurs or if it is very light, pectin must be supplied before jelly can be made. The white part of the orange peel and the pulp of the citron melon are each rich in pectin and are frequently used as a source of supply from which pectin may be extracted to supply the deficiency in other fruits. (Among the Florida fruits to which pectin is frequently added for jelly making are strawberries and pineapple). An excess of pectin or over cooking will produce a tough jelly. An excess of sugar or under cooking will produce a soft jelly that will have a tendency to flow.

There are a few Florida fruits that should be better known for jelly making. The mayhaw found growing wild on the edge of the lakes and ponds of the northern section of the State yields a tart jelly red in color and with a most delicious flavor all its own.

The loquat which yields a light delicately tinted jelly suggestive of apple:

The mulberry which when taken just as it is turning dark, will yield a jelly that will satisfy the taste of those who "sigh for the currants they left behind them."

The roselle, or as it may well be called the Florida cranberry, yields a jelly that closely resembles cranberry in texture, flavor and color. The chemical analysis of the cranberry and roselle shows roselle to be very similar in composition to the cranberry, the most important difference being that cranberry contains benzoic acid and

roselle does not. Since this acid is not desirable in food, what it lacks does not detract from the value of the roselle for jelly making.

The temperature at which a jelly is finished varies both with the variety of fruit and with the amount of sugar used. As the proportion of sugar is increased to any given juice, so the temperature to which the jelly must be cooked will increase. The point at which jelly from citrus fruits, apples, and roselle is usually reached is at or near 106° C, guava jelly is usually obtained at or near 108° C.

Marmalade making involves the same principles as does jelly making. It is a jelly with portions of the fruit distributed through it. This jelly-like consistency distinguishes marmalade from butters, sauces, and jams. Fruits suitable for jelly making are usually suitable for marmalade making. These fruits may be used in the making of pastes, cheese or fruit butter. The tough quality noted in jelly caused by too small a proportion of sugar is developed in the paste by using less sugar in proportion to the pulp than is used in jelly making, and cooking to a higher temperature. Variations in paste making may be obtained by heating the mixture and incorporating air as it is cooling, or by the addition of nuts or melted marshmallows.

So rich in sugar is our wild persimmon that the pulp may be rubbed through a sieve, spread in thin layers on a large platter and dried in the oven. This may be built up from day to day until of desired thickness, then packed away. This can be minced and used in cakes as a substitute for raisins.

Butters may be made from most of the fruits named. Pears, peaches, plums, guavas and grapes are among the fruits that especially lend themselves to the making of butter. After an extraction of juice has been made from fruits for jelly making, the remainder of the pulp may be rubbed through a sieve and with a small addition of sugar, or without sugar this pulp can be cooked to a good butter.

The home pantry is not complete without the addition of sweet pickle. When made with the amount of sugar usually allowed for preserves and the spices of the Orient and only enough vinegar to cut the sweet, there are few products more tempting. Whole peaches, pears, plums, or figs stuck with cloves and pickled are delicious indeed.



Portion of an Avocado Grove of 165 Acres in Dade County, near Miami
Beach. Model Land Company.

In discussing by-products of Florida fruits, one cannot omit the vinegars. The process of making is a simple one. With her wealth of fruit, Florida should strike vinegar from the list of articles imported. Any fruit or vegetable juice containing enough sugar can be used for this purpose. Blackberries, figs, peaches, watermelons (after the juice has been concentrated) cane syrup are among the sources other than citrus fruits from which vinegar may be made. The fruit should be fully ripe, but not decayed. The fruit should be crushed, and put in a clean vessel; a fresh cake of yeast should be dissolved in a cup of juice and added to each five gallons of juice as a starter. Cover the vessel with a cloth to keep insects away and keep it as nearly as practical at a temperature of 80° or 90° F. Fermentation will usually be completed in three to four days as indicated by the cessation of bubbling. Acetic acid fermentation should then set in. An addition of a gallon of good vinegar to each three gallons of juice will be found advantageous or the addition of mother found growing near the surface of vinegar. Do not use the mother from the bottom of the vessel, as bacterial life is extinct in this.

The vinegar mother added prevents the development of objectionable bacteria. The vessel should be covered with a cloth and set in a dark place. Do not exclude the air, as the bacteria must have it in which to thrive. An inexpensive tester has been placed on the market. With this it is possible to follow the development of the acetic acid, and to determine when it has reached its maximum strength. The commercial product must contain $4\frac{1}{2}\%$ acetic acid. When acetic fermentation is complete the vinegar should be syphoned off and sealed tight.

In this day of extended thirst everyone is interested in the possible fruit juices.

Berry syrup may be made of strawberries, blackberries, or dewberries. Select sound fruit, wash, measure and place in a stone jar, for every four quarts of berries use one quart of vinegar. Tie a cheese cloth over the jar. Stir the contents daily. Let it stand for three days. Strain without squeezing and to each pint of juice add a pound of sugar, boil five minutes and seal. Dilute when serving.

Of the citrus and muscadine drinks you have heard; with these to alleviate thirst no one need suffer.

Second to citrus by-products, the guava products probably rank commercially, the jelly being the best known of these. In the past two years the luscious strawberries that remain on the vines when shipping season is over, and that used to be plowed under, have been put up as crushed fruit for use at soda fountains and cafes.

In one of our western counties this year blackberries and dewberries will be canned and put on the market by a local factory.

In Escambia County a big orchard is being developed to furnish fruit for preserving purposes. An examination of the fig exhibit here will convince you of its possibilities. Members of the home demonstration club in Jefferson County found ready sale for 2,000 containers, and a demand for more.

Through home canning last year there was reported to the home demonstration office 1,310,000 containers filled with fruits and vegetables, a business easily representing a five hundred thousand dollar proposition. The quality of the products is the best. The comparative cost of these products when put up in the home, with those purchased from the store is of much interest in this day, characterized by the high cost of living.

The sugar situation makes the outlook less bright for the canning season. Florida's possibilities as a sugar producing State should enable us to solve this problem. Let Florida do it: She can.

Thanks to modern science, however, we are not dependent upon sugar for the preservation of fruits. During the wars of Napoleon near the end of the 18th century, the French government offered a prize for the most practical method of preserving foods for sea service and army stores. Nicholas Appert of Paris, who for nearly fifty years was working in various lines of food preservation as a pickler, a preserver, a confectioner, a brewer, a distiller, a chef, won the award of 12,000 francs. His theory advanced was incorrect, but his method wrought out was correct. It was the present method of preservation by sterilization.

And so, though the high price of sugar and its present scarcity on the market will prevent the housewife from finishing the product for her pantry shelves, juices may be sterilized and stored for later jelly making. Fruits handled in the same way may be put up for preserving

or for the making into marmalades, butters, pastes or confections when sugar is more easily procured and less costly.

In the laboratory we have substituted in preserves with good results the malt syrup or americose supplied by the breweries. It gives a product not so sweet but well flavored. We find among the old recipes handed down by our grandmothers that during the war between the states when sugar like many other articles was difficult to obtain, that the juice of watermelons was filtered and boiled until a heavy syrup was obtained. This was used in making the choicest of preserves.

You have been told of the grape syrups that can be made without the addition of sugar. These will help.

In a recent party, of which I was a member, a trip was made through a portion of our state. The agricultural representative of one of the European countries an attache of the Embassy traveled with us. We drove through Hillsborough and Polk Counties and made the trip across Lake Okeechobee to the East Coast side. The groves were laden with blossom and fruit, a promise with its fulfillment at hand. "The Ever-glad Land?" our visitor asked, "The Ever Glad Land, did you say? Why do you call it so?" "Yes," I replied, "It is Florida. It is the Ever Glad Land. And why should it not be, with its wealth of resources; a matchless soil, climate and limitless possibilities, and with people who are loyal and not afraid."

To us has been given this wealth, richly to be possessed and enjoyed. Let us make it, let us keep it, the ever glad land.

GROWING GRAPES IN FLORIDA

Address delivered by F. J. Zimmerman of the Carman Grape Company, of Oldsmar, Florida, before the annual meeting of the Florida Horticultural Society at Ocala, Florida, May 7, 1920.

Being closely allied with viticulture in the southern part of Texas for a number of years, we found such information as we had in this line to be of much advantage to us when making a special study of the grape industry in Florida, which study we have closely followed for quite a period of years. Years ago our attention was attracted by a large wild grape vine probably of the Little Mountain variety, growing on the banks of the Nueces River in South Texas, the vines being about fifteen inches in diameter and reaching to the tops of the tallest oaks. On close investigation we learned of the scarcity of vineyards, not only in South Texas, but along the entire Gulf Coast, and especially in Florida. Many a dire tale of experience have we heard from residents of these sections. Having visited many of the vineyards of the South and noting varieties closely and taking advantage of that great store of information learned first hand by such men as T. V. and W. B. Munson and Herman Jaeger, who spent many years experimenting with hybrids, we have now collected in our nurseries something over sixty varieties of grapes, exclusive of wild or native varieties. Many of these are crosses of two or more varieties and we are closely classifying them as to their adaptability for different soils and sections of the South. We find the Carman and the Jaeger, two of the best black grapes for this region, having yielded well and resisted disease remarkably well, especially when well cared for. The experience of the Labrusca and Vinifera varieties of the Northern states, in the extreme south, shows that they are very short-lived here, succumbing quickly to disease, especially phylloxera.

The Vinifera varieties of Europe and California are found to do reasonably well only when grafted on Phylloxera resistant roots.

By far the greater portion of our successful grapes for Florida are Bourquiniana and Lincecumii, the most disease-resistant varieties yet discovered for Florida. Among the native grapes of this state is the sweet winter grape,

which is one of the best of the wild grapes for jelly purposes and arbor, a very strong grower and prolific yielder of big bunches but small berries; otherwise the Muscadines are held the heavy yielders and the best arbor grapes of the South, producing very large berries, but not closely aligned in bunches. Owing to climatic conditions, we have found that grapes ripen considerably earlier in Florida than in California or Texas, or in any other part of the United States, giving us much advantage, not only in the local markets, but also in the northern markets. Last year they sold readily in the local markets of Florida, at 25 to 40 cents per pound. The demand was strong and the supply was quite limited. They sold at 35 cents a pound down to the end of the season.

Owing to the fact that most of our grapes ripen during the rainy season, we find it necessary to put the rows from 8 to 10 feet apart and the plants from 8 to 12 feet apart in the row, using the two wired Kniffen system for training the vines on, thus giving the fruit a better chance to dry, we having experienced no bad effects whatever from the rains, the fruit drying in a few minutes when spread out thus on the vines. We have picked grapes from the heaviest loaded vines within half an hour after one of our heaviest showers, with no ill results.

Through many years of the experience of others and about eight years of our own personal experience in this state, we are now thoroughly convinced that we have several dozen well adapted varieties of bunch grapes for growing in the different parts of this state, long-lived and mostly heavily yielding, and can be produced at a minimum cost, compared with the cost of producing other fruits in the state. Many of these grapes have been classed by the leading grape experts of the country as ranking with the best flavored grapes grown. Their connection with the wild grapes of the South gives them a flavor distinctly their own and very delicious. About half a million new plants are being produced at this time in this state for next season's planting. We feel that this itself should speak volumes for the grape industry in this state.

HOW TO SAVE SWEET POTATOES

By C. E. BREHM,

*Tennessee Division of Extension,
in Southern Agriculturist*

The 1920 sweet potato crop was estimated, July 1, at 98,462,000 bushels. Last year the crop was 103,579,000 bushels. Of this crop, 91,191,000 bushels will be produced in fifteen Southern States.

This heavy production in a relatively limited area makes it obvious that the crop cannot all be disposed of economically direct from the field. The bulk of it must be stored for distribution during the winter months. In recent years better methods of storage have been developed and more care has been exercised in putting the crop in storage quarters so as to reduce the loss from rotting and decay. This is particularly true of the larger and experienced growers who have studied the crop from every angle, and as a result their losses are relatively small. There are many other growers, however, whose losses are large, and frequently this is due to ignorance or carelessness in handling. In spite of the best attention there will be a certain amount of loss in storage, but this can be materially reduced by exercising proper precautions.

The best method of storing is in a properly constructed house. In such quarters the potatoes can be kept dry, thoroughly cured, and the temperature controlled—all of which are absolutely essential for storing sweet potatoes successfully. They can be stored in other places, it is true, but the grower making a business of raising sweet potatoes in a rather large quantity will find it economy in the long run to have regular storage quarters specifically adapted for the crop.

Before the crop is placed in storage the house should be thoroughly dried out with a good fire for several hours. A thorough disinfection also should be given by spraying the interior with a solution of 5 pounds of bluestone (copper sulphate) dissolved in 50 gallons of water. In case

bluestone is not obtainable, a spray made by mixing one quart of 40 per cent formaldehyde in 50 gallons of water may be used. The former spray is preferable.

Disinfection is to control the black rot, which in the last few years has come to be very common in most storage houses. This disease is caused by a fungus and may occur on any part of the underground parts of the plant. On the potato it manifests itself by dark-colored or nearly black spots, somewhat sunken and more or less circular on the surface. In the early stages these spots are small



Irish Potato Raising, St. Johns County, Hastings District.

and nearly round, but under favorable conditions they merge together until frequently nearly the entire potato is covered. All such potatoes have a very disagreeable taste, which materially injures their market value. Buyers will discriminate against sweet potatoes showing signs of black rot on them.

Black rot is spread on the seed sweet potatoes and slips and therefore can be carried from one locality to another. The fungus, also, will live throughout the winter in the soil on the remains of dead potato vines and show itself from year to year once it gets into the soil. The seed is

the medium on which it has been spread from one locality to another. Growers who do not have black rot in their fields should exercise extreme care that seed is purchased from growers and localities free of this disease.

It is also spread in the storage house. Once getting in the house, it will live over on sweet potato refuse from year to year and spread rapidly on the new potatoes unless the house is sprayed thoroughly before they are put in the house. This spray will not absolutely control nor cure already infected potatoes, but it will tend to reduce its spread and lessen the liability of clean stock becoming infected.

At the time of digging, the potatoes should be handled carefully and not tossed or dumped recklessly from one receptacle to another. Such handling inevitably results in considerable loss from decay. The eating stock, the seed and the strings should each be separated out and stored separately. Potatoes above one and one-half inches in diameter may be classed as eating stock, while below that down to the strings can be classed as seed. Bruised and otherwise defective potatoes should be sorted out from the sound ones and either sold from the field or a short time thereafter. It will hardly pay to attempt to keep them for any length of time in storage.

As the freshly dug potatoes are brought into the house a slow fire should be maintained to dry off the moisture that will be caused by sweating. Begin at the back end of the bins and fill them all up uniformly rather than fill up one bin and then the next, and so on. After the crop is in the house a temperature of 80 to 85 degrees Fahrenheit, or slightly higher, with plenty of ventilation, should be maintained for a period of ten days to two weeks, depending on the weather. Plenty of ventilation is very important, and with this object in view all doors, windows and ventilators ought to be left open to let the moisture-saturated air escape, even if some difficulty may be encountered in maintaining the desired temperature. At night the doors and windows may be closed, as well as on cloudy days. However, some of the ventilators in the floor and ceiling should be kept open throughout the entire curing period, even on cloudy and rainy days. The air inside the house must always be kept warmer than the outside temperature during the curing period. This prevents moisture being deposited on the walls and ceiling.



Irish Potatoes in Muck Land.



When air warms it expands and takes up moisture. When it cools it contracts and gives off moisture. This is why it is necessary to let the moisture-laden air escape by ventilation.

After the potatoes are thoroughly cured the temperature should be gradually reduced to 55 degrees Fahrenheit and kept as near that point as possible during the storage season. The condition of the potatoes and not the length of time they have been in the curing process determines when to stop firing. When the potatoes toward the top of the storage bins begin to sprout slightly it is time to stop firing. If the temperature goes below 48 degrees F. a fire should be made, or the house opened in the middle of the day when the temperature is high enough. When the temperature goes above 60 degrees F. the house should be opened in the cool part of the day to lower the temperature to 54 or 55 degrees F. and then closed. In mild weather the ventilators in the roof may be partly open all the time, but they should be closed in cloudy and cold weather.

Thermometers should be located on the bin supports on the level with the floor of the bins. I have seen them many times located four or five feet above the floor of the bin. In this position they are more convenient to look at, but they do not serve their purpose half as efficiently. The reason for this is that the temperature varies at different points in the house. The temperature at the top of the bin may be several degrees higher than at the bottom, and it may prove safe for the potatoes at the top, but disastrous for those at the bottom. This is especially true on cold nights, where the difference of a few degrees might prove disastrous to the potatoes in the bottom of the bins.

In spite of the best of care, some rotting will occur. Under no circumstances should any attempt be made to work over the bins and sort out the rotting ones and then replace the sound ones. If there seems to be considerable evidence of rotting in some bins the contents of these bins had better be marketed as soon as possible. If only a limited amount of rotten ones appear, let them go until the contents of the bins are to be marketed. Potatoes should not be disturbed until they are taken out of the house and then they should be shipped to market imme-

diately. Picking over and disturbing the potatoes hastens decay.

When removing potatoes from the house for market avoid having them become chilled, as will be the case on very cold days. This hastens decay also.

A SOUTHERN METHOD

Fitz Argo, in Southern Agriculturist.

For several years I have had remarkable success in keeping sweet potatoes. I preserve them the year round, often throwing some out of my bank at digging time when cleaning up for the new crop.

I think it is a mistaken idea to wait for frost to dig. Sometimes they are ready long before, and sometimes they are very immature at frost. Such a crop is almost sure to rot. My way is to watch the vines. Well-developed vines generally begin to yellow the leaves by October 1 in this latitude. Select a fair, dry time, and use care in digging and handling. Sled and mule, with tubs and other vessels, sitting low on the ground, is best to haul on. It eliminates much work in lifting as well as avoids many bruises. Have a perfectly dry, warm house. Clean it out well and sprinkle with lime. Lay on this lime-sprinkled dirt floor from 4 to 6 inches of clean, dry pine straw and leaves. Put the tubers on this straw carpet and cover them with straw the same depth as on the floor. Next cover as nearly air-tight as possible, straw, potatoes and all, with dirt taken from the field in which the potatoes grew. When the wrapping up process is completed, scratch a hole 4 or 5 inches wide in the very top of the pile and leave them alone. Do not be alarmed at the "sweating," which begins immediately. For some time the top ones that you can see in the hole will be completely drenched with this evaporation from those below. This seasoning out process is the salvation of the potatoes. It is the nearest substitute to kiln-drying. Leave this hole open until there is danger of a freeze, or until the yams cease to sweat. Then cover the hole with the straw and dirt. Let the whole pile remain thus until spring. What are needed for table use may be removed

carefully from the bottom and closed up as before. Go through this whole procedure of digging, strawing and dirting the same day. If you have more than you can care for in one day, attend to what you dig, and begin afresh the next day on another pile. I think this very important. Do not sort or cull except to throw out the cut and rotten ones. It only involves more handling and delays the banking.

SWEET POTATO GRADES

By M. C. GAY,

Secretary Farm Bureau, Atlanta Chamber of Commerce.

It costs a great deal more to market a crop now than formerly. Containers have doubled in price within the last four years and freight rates have increased. This makes it all the more necessary that we grade our farm products and restrict our shipments to include only the better grades. Our Southern sweet potatoes have been discriminated against on the distant markets because of their unattractive appearance. To overcome this prejudice, we should grade very carefully and ship in attractive packages.

Recently the United States Bureau of Markets recommended grades for sweet potatoes. The specifications are as follows:

U. S. GRADE No. 1.

U. S. Grade No. 1 shall consist of sound sweet potatoes of similar varietal characteristics which are practically free from dirt or other foreign matter, frost injury, decay, bruises, cuts, scars, cracks, and damage caused by heat, disease, insects (including weevils), or mechanical or other means.

The diameter of each sweet potato shall not be less than one and three-quarter inches nor more than three and one-half inches, and the length shall not be less than four inches nor more than ten inches, but the length may be less than four inches if the diameter is two and one-quarter inches or more.

In order to allow for variations incident to commercial grading and handling, 5 per cent, by weight, of any lot may not meet the requirements as to diameter and length, and, in addition, 6 per cent, by weight, may be below the remaining requirements of the grade.

Any lot in which the diameter is not less than one and a half inches and which contains a greater percentage by weight of sweet potatoes below one and three-quarters inches than is permitted in U. S. Grade No. 1, but which

otherwise meets the requirements of such grade shall be designated as U. S. Grade No. 1 Medium.

Any lot in which the length is not less than six inches nor more than twelve inches and which contains a greater percentage by weight of sweet potatoes above ten inches in length than is permitted in U. S. Grade No. 1, but which otherwise meets the requirements for such grade shall be designated as U. S. Grade No. 1 Long.

U. S. GRADE No. 2.

U. S. Grade No. 2 shall consist of sound sweet potatoes of similar varietal characteristics, not meeting the requirements of the foregoing grades, which are free from serious damage caused by dirt or other foreign matter, frost injury, decay, bruises, cuts, scars, cracks, heat, disease, insects, or mechanical or other means, and which are not less than one and a half inches nor more than three and a half inches in diameter.

In order to allow for variations incident to commercial grading and handling, 5 per cent by weight of any lot may not meet the requirements as to diameter, and, in addition, 6 per cent by weight may be below the remaining requirements of this grade.

U. S. JUMBO GRADE

U. S. Jumbo Grade shall consist of sound sweet potatoes of similar varietal characteristics, which are free from serious damage caused by dirt or other foreign matter, frost, injury, decay, bruises, cuts, scars, cracks, heat, disease, insects, or mechanical or other means, and which are not less than three and a half inches in diameter.

In order to allow for variations incident to commercial grading and handling, 5 per cent by weight of any lot may be less than the diameter prescribed, and, in addition, 6 per cent by weight may be below the remaining requirements of this grade.

U. S. GRADE No. 3.

U. S. Grade No. 3 shall consist of sweet potatoes not meeting the requirements of any of the foregoing grades.

"Practically free" means that the appearance shall not be injured to an extent readily apparent upon casual ex-

amination of the lot, and that any damage from the causes mentioned can be removed without appreciable increase in waste over that which would occur if the sweet potatoes were perfect.

"Diameter" means the greatest dimension at right angles to any portion of a central line running through the sweet potato from stem end to root end.

"Free from serious damage" means that any damage from the causes mentioned can be removed without increase in waste of more than 10 per cent by weight over that which would occur if the sweet potatoes were perfect.

CONTAINERS FOR SWEET POTATOES

Except under abnormal conditions the sweet potato will probably be a comparatively cheap food product, and a large part of the crop will be sold locally or shipped in bulk to nearby markets. A great many farmers believe that grading and shipping in containers will greatly increase the cost to the consumer and thereby cut down consumption. The housewife quits buying sweet potatoes because of the frequent experience of getting potatoes which are cut, bruised and decayed and not because of the price. She knows that it is cheaper to buy five pounds of sound potatoes at six cents a pound than to pay two cents a pound for ten pounds and then have to work and trim to get enough for one pie. If we consider all losses in bulk shipment it is evident that we could well afford to ship in containers, particularly in the winter months.

Efficiency, cost, and market preferences are the principal joints to be considered in the selection of a container. There is practically no difference in the cost and efficiency of the crate, hamper and bushel basket. The trade in mid-western and northern markets objects to the crate on the ground that it is not a good display container. The crate is popular with the storage house men in the South because it can be used in the field, storage house, and in the shipping to market. In the long run it will probably pay to use lug boxes in harvesting and storing, and hampers or bushel baskets in shipping. No matter what container is used, the product should be

carefully graded and the package well filled. The hamper and the basket, if properly constructed, will meet almost every requirement.

There is no good reason why the crate should not prove satisfactory. The California growers ship sweet potatoes quite successfully in crates holding a hundred pounds.

SUNFLOWERS

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY

Office of Drug, Poisonous and Oil Plant Investigations.

The sunflower has been cultivated to some extent in almost all parts of the United States either as an ornamental plant, for its seed, or as a silage crop.

THE SUNFLOWER AS A SEED CROP

The sunflower has been grown as a seed crop chiefly in California, Illinois, Indiana and Missouri. When cultivated for this purpose it does well wherever the soil and climatic conditions are favorable for the production of good crops of corn. Land to be planted to sunflowers is prepared as it would be for planting to corn. Sunflower seeds may be safely planted somewhat earlier than corn, as late spring frosts do not kill the young plants. However, where the season is fairly long, they may be planted on lands which have remained too wet for cultivation until 2 or 3 weeks after the season for planting corn is past. The seeds may be planted by hand or with a corn planter, about 2 inches deep, in hills 3 feet apart in rows 3 or 3½ feet apart. From 4 to 8 pounds of seed are required to an acre. The Mammoth Russian variety is preferred for seed production. When the plants are 8 to 10 inches tall they are thinned, leaving two to each hill. The crop is cultivated in practically the same manner as corn.

Sunflowers grown for seed are generally harvested just before the seeds are quite ripe enough to shatter, usually the middle of September. Various methods of harvesting and thrashing are employed. Frequently a wagon with a tight box fitted with one high side-board is drawn along side the rows, the heads are cut off with a stout, sharp knife, and thrown into the wagon box and against the side-board, whereby a large part of the seed is shelled out. A workman in the wagon uses a stout stick or curry-comb to remove any seed remaining in the head, which is then thrown upon the ground. In this manner three men usually harvest and thrash at least on acre a day. Some-

times a pea or small grain thrasher is used to separate the seeds from the heads. Except with very small crops, the use of a machine will effect a large saving of time and labor in thrashing. The seed is cleaned on a fanning mill, spread out on a floor, and turned at intervals until thoroughly dry, since new seed tends to become musty if stored in large quantities.

YIELD AND PRICES

The yield of seed is quite variably and depends largely upon the nature of the soil and the character of the season. Under very favorable conditions the yield may reach 2,000 pounds per acre, but usually ranges from 800 to 1,200 pounds per acre. The weight per bushel of seed varies from 25 to 35 pounds, averaging about 30 pounds. Prior to the war the estimated cost of producing sunflowers in this country was nine to twelve dollars per acre. The price for the seed secured by growers ranged from 2 to 4 cents per pound. On a basis of a yield of 1,000 pounds per acre and a price of 3 cents per pound, the net return to the grower was not far from \$20.00 per acre. The current price of sunflower seeds is 4 or 5 times the pre-war figure.

USES OF SUNFLOWER SEED

Sunflower seeds are extensively used as feed for poultry and birds, and are often fed to farm animals to improve their physical condition. The seeds are rich in fat and protein, and it is usually preferred to mix them with other grains in feeding. Under pressure sunflower seeds yield about 20 per cent of oil, the higher grades of which are edible. The poorer grades are useful in soap making, wool dressing, in paints and in certain kinds of varnish. The cake left after the extraction of the oil by pressure has a feeding value approximately equal to that of the cake resulting from the expression of corn oil or linseed oil. It is doubtful whether sunflower oil could now be manufactured at a profit, owing to the present high price of the seed and the relatively low prices of other oils with which it would come into competition.

THE SUNFLOWER AS A SILAGE CROP

Experiments with sunflowers as a silage crop have been carried on for several years in a number of states, for the most part with gratifying results. The variety generally grown is the Mammoth Russian, seed of which may be obtained from local dealers or the larger seed houses. The viability of the seed should be tested before sowing. Under ordinary conditions when planted alone, the seed is sown at the rate of 8 to 10 pounds per acre, under irrigation 12 to 15 pounds, and when mixed with corn about 4 pounds. The seed may be sown with a grain drill set to space the rows the same as for corn. When well up the plants are thinned to stand 6 to 8 inches apart in the row, or 12 inches apart if under irrigation.

Sunflowers for silage are cultivated like fodder corn and at about the same expense. They are cut when a little more than one-half the seed is in the milk stage. In harvesting, the corn binder is used, but many crops are cut by hand. The plants are run through an ordinary ensilage cutter and siloed like corn.

Yields of green forage reported have ranged from 5 to 10 tons per acre under dry-land conditions, and from 20 to 30 tons per acre where sufficient moisture was available. These yields range from 50 to 200 per cent greater than that of corn grown under similar conditions.

Under conditions of soil and climate especially favorable for the growing of corn, sunflowers make a rank growth, are hard to handle and frequently offer no advantage over corn for silage. Sunflowers promise to become a useful silage crop on soils not entirely adapted to corn, and in regions where the growing season is too cool for the production of large yields of silage corn. The crop is more resistant to drought than corn, and has given yields of 60 per cent greater than corn under the same severe drought conditions. It is also much more resistant to frost than corn, and usually remains green from 2 to 3 weeks after corn has been cut by frost.

Preliminary tests with sunflower silage indicate that its feeding value is about the same as that of corn silage. Sunflowers when cut, dried and fed as stover are also said to show a good feeding value.

DISEASES AND PESTS OF THE SUNFLOWER

The sunflower plant is more or less subject to the attacks of several plant diseases and insect pests. One of these is a rust which has caused very serious damage in some sections, especially where the crop has been grown for several seasons in succession. The sunflower weevil frequently attacks the sunflower seed before it has ripened sufficiently to be harvested, and in some sections of the United States where sunflowers have been grown for several years in succession the ravages of this pest have caused the crop to be abandoned. Systematic rotation of the sunflower with other crops has been recommended in weevil-infested areas. In some places cutworms have proved troublesome, and in others grasshoppers have destroyed the entire crop.

Sunflower heads, when they are ripening, are very attractive to birds, whose depredations frequently cause heavy losses of seed.

W. W. STOCKBERGER,
Physiologist in Charge of Drug, Poisonous
and Oil Plant Investigation.

MANUFACTURE OF SUGAR CANE SO AS TO PREVENT CRYSTALLIZATION AND FERMENTATION

BY J. K. DALE AND C. S. HUDSON.

Pure sugar cane syrup is a wholesome and delicious food product. A more extensive consumption and a larger production would react to the benefit of both the consumer and the producer. However, the tendency of sugar cane syrup to crystallize and ferment has been an obstacle to extending its marketable territory and hence has curtailed production. Sugar cane syrup if evaporated too thick will crystallize, while, on the other hand, a thin syrup is very likely to ferment in warm weather unless it has been packed with proper sterilization in airtight containers. Marketing in bulk is impossible except during cool weather and cold storage warehousing must be resorted to if cane syrup is to be held in barrels any length of time during warm weather.

A thick sugar syrup will not ferment as readily as a thin syrup. Corn syrup or glucose at a density of 42° Baume (19.50% water) is transported and stored during the warmest weather without fermentation. Experiments have shown that sugar cane syrup of this density also does not readily ferment in warm weather. Ordinarily, however, a sugar cane syrup containing as little as 19.5% water will crystallize almost solid. The problem, therefore, of making a cane syrup that will not ferment and so can be transported, stored and marketed in bulk throughout the year develops into a problem of making a syrup that will not crystallize when evaporated to a water content of less than 20%.

The sweetness of cane juice is due to cane sugar (chemically known as "sucrose") and invert sugar. The former, sucrose, is present in very much larger amount than the latter, but the sweetness or flavor is not dependent upon the relative proportions of these sugars. Sucrose crystallizes, or separates out from solution, very readily while invert sugar does not readily crystallize. By decreasing the proportion of sucrose in cane juice and increasing proportionately the amount of invert sugar the sweetness will not be diminished, while the tendency of the finished syrup to undergo crystallization will be

greatly lessened. The process of transforming sucrose into invert sugar is called inversion, and is one of the most frequently occurring chemical reactions taking place in nature. A good example of this process is the manufacture of honey by bees. Honey is principally invert sugar, while it is mainly cane sugar or sucrose that the bees collect from plants and flowers.

Transformation of sucrose to invert sugar on a large scale can be brought about in several ways: by a very long boiling with water, by boiling with acids or by the action of an extract obtained from yeast, which is called "invertase." For the purpose of manufacturing a heavy bodied sugar cane syrup that will not crystallize a partial transformation or inversion of the sucrose into invert sugar can readily and easily be accomplished by the use of a little yeast extract, or, as it is generally called, "invertase."

Invertase is a substance chemically classified as an enzyme. The cheapest and most available material from which to prepare invertase is yeast. When brewer's yeast can be obtained as a by-product of the manufacture of cereal beverages it furnishes a cheap source of supply for the preparation of this enzyme. Invertase as it is used to invert sugar in the manufacture of cane syrup is a brown liquid with a peculiar though not disagreeable taste. On first appearance it may seem that this liquid, when added to cane juice, would affect the flavor of the finished syrup, but this is not the case, as it is necessary to use such a small amount of this yeast extract that the pleasant flavor of the finished product is in no way affected.

METHOD FOR THE USE OF INVERTASE IN THE MANUFACTURE OF CANE SYRUP

The manufacture of a sugar cane syrup that will not crystallize, using invertase as the inverting agent, necessitates evaporation of the cane juice to syrup in two stages. The juice is first evaporated to a semi-syrup of a density about 20° Baume and the invertase is then added. Invertase does not act instantaneously in transforming sucrose into invert sugar, but several hours must be allowed for this process to take place. After sufficient of the sucrose has been transformed into invert sugar the semi-syrup is evaporated to a heavy bodied finished syrup.

The above is the principal innovation in the manufacturing process. Instead of cooking the juice directly to syrup as is usually done there must be a break in the evaporation at which point the invertase is added and then given a sufficient length of time to get in its work of transforming sucrose into invert sugar before the evaporation can be finished.

Besides the above very essential point in the proper carrying out of this process there are several other points which must be observed.

First. The density or Baume of the partially evaporated cane juice to which the invertase is added. Invertase acts rapidly upon sucrose in dilute solutions, but in concentrated liquors the rate of its action is greatly reduced. The concentration at which the rate of inversion begins to be very materially reduced is 20° Baume measured at 60° Fahrenheit. The first evaporation of cane juice should not be carried beyond this point. On the other hand, it is desirable that the first evaporation be carried to as near this density as possible so that the least storage capacity possible will be required for this semi-syrup during the period while the invertase is acting upon it.

Second. The temperature of the cane juice liquor at the time of adding the invertase. The action of invertase in transforming sucrose to invert sugar is greatly influenced by the temperature. A low temperature the action is very slow, but the rate of inversion increases rapidly with an increase in temperature until a maximum rate is reached at about 140° F. At temperatures higher than this the invertase is rapidly destroyed. Hence, to get the maximum transformation of cane sugar to invert sugar in a cane juice liquor the invertase should be added to the liquor when the temperature of the latter is near, but not above, 140° F. It is also desirable that the temperature be maintained near this point during the entire period allowed for the action of the invertase. However, if invertase be added to a large volume of cane juice liquor at this temperature and the tank containing the liquor be covered, this liquor will cool so slowly that for all practical purposes the temperature will be high enough during the time necessary for inverting action to take place.

Third. The acidity of the cane juice liquor. Invertase exerts its greatest activity in a slight



Sugarcane in Calhoun County.



ly acid sugar solution. To get proper efficiency from an invertase preparation the cane juice liquor should be distinctly acid to litmus. This point should give no difficulty, as cane juice is always slightly acid, and this acidity is just about the proper degree to get the best results from invertase.

Fourth. The amount of invertase to be used and the length of time to be allowed for its action. These two factors are dependent largely upon one another. A smaller amount of invertase can be used and a longer time allowed for its action, or a larger amount of invertase may be added to the cane juice liquor and the time allowed for its inverting action shortened. In the operation of a syrup plant employing the invertase method herein described, it was found convenient to allow twelve hours for the inverting time; that is to say, twelve hours from the time the invertase was added to the semi-syrup until commencing its final evaporation to syrup. Allowing this period of time for the inverting action to take place, it was found necessary to add 3 pints of invertase per 100 gallons of semi-syrup to obtain sufficient transformation of sucrose to invert sugar to prevent crystallization in the finished syrup. If the above points are kept in mind and carefully observed no difficulty will be experienced in manufacturing a syrup with invertase that will not crystallize.

EQUIPMENT NEEDED FOR MAKING SYRUP BY THE INVERTASE PROCESS

Since syrup made by this process must be evaporated in two stages, for continuous operation two evaporators should be used. Two tanks for treatment of the semi-syrup with the invertase are also essential. The evaporators may be of any of the usual types, though it is desirable that the second or finishing evaporator be of the non-continuous type so that a definite amount of the semi-syrup can be evaporated to finished syrup, for thus a more uniform product can be obtained. The size of the evaporators and also of the tanks will, of course, depend upon the amount of cane it is planned to grind per day. The necessary size of the invertase treatment tanks can be estimated from the following data: Ten (10) tons of cane will give about 1,500 gallons of juice. This amount of

juice will make 600 gallons of semi-syrup of 20° Baume density, and this in turn will make 220 gallons of syrup of 42° Baume measured at 60° F. For a syrup plant in which it is planned to grind ten tons of cane per day of twelve hours, two tanks of a capacity of at least 600 gallons each should be provided. The above suggested equipment is planned on the assumption that the syrup plant will operate approximately twelve hours a day, shutting down each night for approximately the same length of time. The procedure would then be to fill one tank each day with 20° Baume semi-syrup from the first evaporator, add the invertase at the time of shutting down, then the next day evaporate this semi-syrup to finished syrup, using the second evaporator. While this first tank of semi-syrup is being evaporated to finished syrup in the second evaporator the first evaporator would be evaporating mill juice to semi-syrup and discharging it into the other tank. Thus a continuous operation would be maintained, one tank being filled each day with 20° Baume semi-syrup and one tank being emptied each day. One evaporator would be in constant use evaporating juice to 20° Baume semi-syrup and the other evaporator would be in constant use evaporating the 20° Baume semi-syrup made the previous day to finished syrup. By this procedure each tank of semi-syrup would stand over night, thus giving a sufficient period for the action of the invertase. Of course the first evaporator would be piped to discharge into either tank and each tank would be piped to discharge into the second evaporator.

DIRECTIONS FOR OPERATION

Although the points to be observed in the manufacture of a non-crystallizable sirup with invertase have been given above, these points may be concretely summed up in the following directions for operation. Evaporate the cane juice from the mill or clarifiers in any type of evaporator but do not carry the evaporation farther than to a density of 20° Baume.* Run this semi-syrup into a tank which may be of any convenient shape or material, but should be large enough to hold the entire day's run of

*By this should be understood 20° Baume when the measurement is made at a temperature of about 60° F. If this measurement is made on the boiling hot semi-syrup the Baume spindle should read only 15-16°.

20° Baume semi-syrup. At the end of the day's run observe the temperature of the semi-syrup in the tank. If the temperature is above 140° F. cool the liquor to this temperature. If the temperature is already below 140° F., or if it has been cooled to 140° F., add the invertase in the proportion of 3 pints of invertase for each 100 gallons of semi-syrup in the tank. Stir well and cover the tank. Allow this tank of semi-syrup with the added invertase to stand all night and the next day evaporate to syrup as rapidly as possible. The resulting syrup should have a density of 42° Baume when measured after it has cooled to atmospheric temperature. This means that the syrup should be cooked to a Baume reading 36-37° when the measurement is made in a sample of the boiling hot syrup taken directly from the evaporator. These directions should be followed as closely as possible but slight variations will not materially affect the result. For instance, the recommended density of 20° Baume should be taken as a standard but a deviation of 2 or 3 degrees either way is permissible. The same may be said of the temperature. The temperature of the semi-syrup should preferably be at 140° F. when the invertase is added, but a range of 5° higher or 10° lower may be allowed. Three (3) points of invertase to 100 gallons of semi-syrup has been found to bring about sufficient inversion of sucrose to invert sugar to prevent crystallization. The addition of a larger amount of invertase than this proportion will only result in the inversion of more sucrose than is necessary, but this will in no way injure the finished syrup. The choice of twelve hours for the action of the invertase on the semi-syrup is made as being a convenient length of time. An hour or two less time will not greatly affect the result. A slightly longer time will only result in a somewhat greater inversion of the sucrose which will not be objectionable. The method above outlined can be used in both large and small syrup plants.

ADVANTAGES OF THE METHOD

The process of making cane syrup as described above is naturally a little more troublesome and expensive than the present very simple methods employed in our Southern States with the exception of Louisiana. However, the advantages that will result from the manufacture of a

better product, one that will not crystallize or readily ferment, should far more than counter-balance the additional trouble and expense involved in this process. Syrup made by this method can also be packed in fiber containers with much more satisfactory results than syrup made by the usual methods.

TRIAL DEMONSTRATIONS OF THIS KIND

This method of preventing fermentation and crystallization may be easily tried on a small scale at a negligible expense. or the purpose of making a small trial run it is only necessary to have two or three clean barrels in which semi-syrup may be placed. Any other suitable container may be used. Large mills will probably already have extra tanks or other containers which can be used. An appropriate amount of semi-syrup of approximately 20° Baume is prepared and placed in the barrels or other containers, the temperature is adjusted to as near 140° Fahrenheit as possible, the proper amount of invertase is added and the semi-syrup, after thorough mixing, is allowed to stand over night. The regular process used by the syrup maker is then interrupted for a sufficient length of time next day to evaporate the semi-syrup to finished syrup. If, however, this method is adopted as a permanent process two evaporators must, of course, be used and two additional tanks provided as already indicated.

The Bureau of Chemistry will, so far as possible, furnish, upon request, during the season of 1920 a sufficient amount of invertase free of charge to any syrup producer who wishes to try this method on a small scale and will send a representative to give a demonstration of the method. There will be no expense to the syrup producer for this demonstration. Those who wish a demonstration of the method should write immediately to the Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C., stating the approximate date when they will begin making syrup and the approximate date when they will finish. If it appears at the end of the season that a sufficient number of syrup makers wish to use this method as a permanent process the Bureau of Chemistry will try to arrange a plan whereby some manufacturer or manufacturers will supply invertase in large amounts for the season of 1921. The cost of such invertase, when supplied for the season of 1921, will depend to a considerable extent on the demand and the amount used; its cost, when figured on the basis of a gallon of syrup, should, however, be quite small. Further information regarding this matter can be given syrup makers by the Bureau of Chemistry after the close of the present season.

THE GILBERT-STEVENS PROCESS

At Jacksonville, Florida, a process has been developed for the preparation of cane sirup before evaporation, which, it is claimed, prevents fermentation: It is known as the Gilbert-Stevens process. The fermenting elements

are extracted by scientific process before the juice is boiled, as no known method will completely remove them after they have been thoroughly cooked into the sirup. The removal of the gums, albumens, starches, resins and other alien elements and excess acids is necessary in order to prevent fermentation. It is also claimed for this process that sufficient inversion takes place to prevent crystallization.

MANUFACTURE OF SUGAR CANE SYRUP ON SMALL SCALE

Contribution from the Bureau of Chemistry, U. S. D. A.

The growing demand for syrup made from the full cane juice has led many people to try to obtain this product directly from the farmer, just as they endeavor to get maple syrup from an owner of a maple grove. As a result the Department of Agriculture has been receiving many requests from growers of small acreage of cane for information as to the proper methods of making a small quantity of syrup either for home use or for a special market. The Department has published no specific bulletins on this subject, although methods for making the syrup from sugar cane are practically the same as those used for the manufacture of syrup on a small scale from sorghum cane, which is discussed in Farmers' Bulletin No. 477. The chief difference in making syrup from sugar cane and from sorghum lies in the fact that in sorghum cane there is considerable starch which is expressed from the cane and which should be allowed to settle before the juice is run to the evaporator. Sugar cane possesses none of this starch and, therefore, the sugar cane juice need not be allowed to settle.

The following directions for making of syrup from sugar cane have been prepared by the Sugar Laboratory of the Department:

In the making of syrup from sugar cane on a small scale, the farmer must use some form of mill, either an upright, two-roller or three-roller mill driven by horse power, or a vertical three-roller mill driven by horse power, gasoline, or steam. In some cases a group of cane raisers on as small scale can establish a mill for common use, or the owner of a mill may grind cane for others at a fixed charge. These small mills cost from 25 to 75 dollars. In the use of them, it is necessary for some one to feed the stalks one or more at a time into the mill. The residue cane known as bagasse is too wet to be used directly for fuel.

The juice from the mill should be caught in a barrel or tank and can be taken in buckets to the boiling apparatus, or may be caught in a wooden trough with a pipe connection to the evaporator. Before the juice is put in

the boiling pan it should be strained through a cheese-cloth or a wire-mesh seive somewhat finer than an ordinary window screen. This removes the solid particles from the cane and helps to improve the color and flavor of the syrup.

The simplest form of evaporator, and yet one that will produce good syrup, is a large, shallow, oblong pan which may have a metal bottom and wooden sides. This is placed immediately over some form of furnace. This pan may be divided by numerous partitions into separate small pans; or a number of separate pans may be used. The juice as it is heated up to the proper point and skimmed is then ladled into the next pan, so that the fresh juice starts in at the beginning and the last pan contains the finished syrup.

In no case should fresh juice be added to cooked juice after it has been boiled down, as this will produce a dark, ill flavored syrup and prevent the proper removal of all scum through the successive pans. The lightest-colored and best-flavored syrup is produced by boiling the juice as rapidly as possible and removing the syrup as soon as it has properly thickened. The best practice is to keep the juice boiling so as to have not more than an inch of boiling syrup in the successive pans in order to induce clear boiling.

As soon as the fresh juice begins to boil in the first pan, which should be over a hot part of the fire, a certain quantity of scum rises to the surface. This scum should be raked to the side and scooped out. Removal of this scum is absolutely necessary to produce a fine-flavored and good-colored syrup. This scum results from the fact that the juice of the sugar cane contains albuminous substances like the white of an egg, which curdle on heating and by curdling take up the floating material, and clear the juice. The boiling of the juice in the first pan should be continued until the heavy scum no longer comes to the surface. It should then be ladled into the second pan or partition. The purpose of the second pan or partition. The purpose of the first pan is to clarify the juice. Boiling in the second pan or partition should be continued until the juice has become a thin syrup. The further heating which the juice receives in the second pan will cause other matter in solution in the juice to come to the top and this, again, should be skimmed. When the juice has become a thin syrup and

skimmings no longer rise to the surface, it should be ladled into the third pan which is back toward the stack of the furnace. In this pan the syrup should be boiled until it is sufficiently thick.

Those familiar with syrup making can tell, from a peculiar breaking of bubbles on the surface of the liquid, when it has reached the necessary thickness. Others determine this by dropping a little of the syrup from a cup and noting the way in which the liquid drops and the size of the drops. This method, however, cannot be recommended to beginners in syrup making. These should provide themselves with a Baume hydrometer (a closed glass tube weighted at one end so as to float upright; on one side of the tube is given a scale, like the scale on a thermometer, and the point to which the tube sinks in the liquid shows the density of the liquid; the scale is divided from 0 up to 50). Place the syrup in a deep tin cup and allow the hydrometer to settle in the syrup. The point on the scale at the top of the liquid can be read upon the stem of the tube. When the hydrometer comes to rest at from 32 to 35 on the scale, the syrup has reached its proper density. It must be remembered, however, that the hot syrup is thinner than the same syrup after it is cold. One can readily experiment for himself and determine the density at which to stop boiling his particular cane juice.

Cans or other containers should be sterilized by scalding in boiling water. The syrup should be poured in these hot, and the container immediately sealed. It is then best to cool the syrup as rapidly as possible by the use of cold water around the cans, as syrup allowed to cool gradually often gets darker.

TO PREVENT CRYSTALLIZATION

Sometimes when syrup is not accurately made it shows crystallization into sugar after standing a week or so. This crystallization results either from evaporating the juice to too thick a syrup, or from the fact that the cane from which it was made was very ripe. Crystallization can be prevented by taking it out of the final pan while it is slightly less thick. Another method is to cut the cane and not run it through the mill for one or two days, as this allows some of the sugar to break up. Others

allow the juice from the cane to stand for some time before boiling, but this involves danger of having the juice ferment too far with the result that the flavor of the syrup may be spoiled.

Makers of syrup should exercise great care in seeing that the barrels, buckets, troughs, or other containers used to handle the cane juice, and the cheesecloth or screens used for straining it, are kept clean. They should be washed frequently with water. In the event that the buckets and barrels have been allowed to stand for some time after use and have become sour, they should be washed out with limewater, made by slacking about two pounds of lime to a bucket of water. This limewater should then be washed out carefully with cold water.

In these directions it must be borne in mind that the methods described are designed for the small maker, though they can be used in manufacturing syrup on a somewhat larger scale. Indeed the home-made syrups, which may be prepared by these directions, are not surpassed in flavor and desirability by the products from large mills though the latter may be able to manufacture syrups more economically.

PROCEEDINGS OF THIRD ANNUAL CON- VENTION FLORIDA DAIRY ASSOCIATION

OFFICERS

F. C. Groover, Honorary President.....	Jacksonville
E. H. Long, President.....	Olustee
Aug. E. Van Eepoel, First Vice-President.....	Tampa
H. F. Bostick, Second Vice-President.....	Quincy
H. S. Pennock, Third Vice-President.....	Jupiter
V. M. Gerrard, Fourth Vice-President.....	Orlando
W. M. Traer, Secretary.....	Jacksonville
V. C. Johnson, Treasurer.....	Dinsmore
Office of Secretary.....	P. O. Box 360, Jacksonville, Fla.

ANNOUNCEMENT

This somewhat condensed report of the Third Annual Convention of the Florida Dairy Association, held in Orlando, September 21 and 22, 1920, is published in the Biennial Report of the Department of Agriculture through the courtesy of Hon. W. A. McRae, Commissioner of Agriculture.

TUESDAY, SEPTEMBER, 21

All business sessions were held in the auditorium of the Orlando Board of Trade club house, through the courtesy of that organization, which did everything possible to make the convention a success. The screened-in porch was given over to the dairy equipment and feed dealers for an extensive display, which was made in a way that was educational and helpful to those who attended the convention.

President Alf. R. Nielson opened the meeting at half-past ten in the morning by introducing J. Hughes, of the Orlando Board of Trade, who welcomed the members and told them dairy association work is constructive and that there is nothing to hinder the success of every dairyman who follows sane methods of producing and marketing milk and dairy products.

E. H. Long, of Olustee, responded to the welcome by stating that there is no place in the State more beautiful than Orlando, and the dairymen and dairywomen were glad of the opportunity to take a short vacation in that city.

PRESIDENT'S ANNUAL ADDRESS

By ALF. R. NEILSON, West Palm Beach

The dairy industry of the State of Florida is beginning to assume the place that it should among the many industries of which Florida is justly proud. Not many years ago it would have been almost impossible to call for a glass of milk in any of our hotels and restaurants and expect to be served with it. The can reigned supreme in most of our homes and in nearly all of our hotels and restaurants. Today we can find good, wholesome, fresh milk served almost everywhere, and the homes are demanding milk, at least for the children. The supply of good, fresh milk is not adequate, even today, to care for this ever-increasing demand, and especially is this true while our winter visitors are among us.

MILK AND WHAT IT MEANS TO FLORIDA

Milk is becoming more and more recognized as an absolute essential in the daily diet of the human race. To properly nourish and develop our children we must have milk and its products. To assure a prosperous and vigorous commonwealth that is always striving to make the most of her resources, we must have children growing up that are properly developed and nourished. Every farm should have at least two or more milk cows, so that the home can have an abundance of good, fresh milk and butter on its table. Every city and town should strive to support two or more commercial dairies, so that our city people can have their supply of this great necessity in their daily diet. The number of our winter visitors is entirely dependent on the supply of milk available. Without an exception, do they demand an adequate supply of this food, and if it is not available they are very reluctant in coming back. A well satisfied visitor always reflects favorably in any community where he may be, for we well know that some of our most prosperous communities in this State are the results of satisfied visitors.

FLORIDA AS A DAIRY STATE

Farming operations in Florida have proved the most successful where carried on in an intensive manner. Our soil and our climate make the intensive plan of farming more economical as well as profitable, and the milk cow rounds out an intensive scheme of farming to the fullest extent. Our climate allows us to keep our cows on pastures the year round, and where our farming is properly planned there are but few days that we are not able to have some succulent forage crop grow to advantage. That we can produce milk and butter-fat as economically and



Jersey Herd, near Miami. Model Land Company.

profitably as in any of our greater dairy States has been proved conclusively. We have problems peculiar to our State that must be solved, and many others are bound to crop up as the industry grows, but these can be met and successfully solved if we are organized and properly prepared to cope with them. Our natural advantages are bound to make the dairy industry in Florida one of her greatest industries.

TEXAS FEVER TICK

To my mind, the greatest and most serious menace we have in Florida today, to the successful and rapid development of the dairy industry, is the Texas fever cattle tick. I doubt if there is a man or a woman in this room today who will not agree with me when I say that of all of the obstacles in the way of the development of the dairy industry in our State, the Texas cattle tick is the greatest. This pest is forcing a great many of our dairymen to milk cows that are a liability instead of an asset—why, because he cannot even think of importing better stock, because either he himself, or others, have learned from bitter experience the utter folly of trying to handle susceptible cattle under tick conditions. This pest is ever taking its toll in the decreased milk flow due to his blood-sucking habits, and thereby making the cost of producing milk where he reigns from 40% to 60% greater than where tick-free conditions prevail. Is it a wonder that the dairyman is impatient and wonders what in the world is holding back such a simple problem as tick eradication from becoming an accomplished fact? Some time ago, while the no-fence agitation was at its height, I was approached on the subject by a friend of mine. This man is a range cattle man with a great deal more progressive-ness than the average range cattle man. In fact, he is for tick eradication and is even dipping; trying to lessen the ravages on his herds by the tick. When I asked him what he thought of the movement he said: "Why, it will ruin the range cattle industry if we have a State-wide no-fence law." I answered that I could hardly agree with him on that point, however, if it proved to be the only way we could eradicate the Texas fever tick that I was for the no-fence law, but that I felt that with the proper co-operation of the range cattle men we should have but little trouble in getting rid of the tick, with possibly some fencing here and there. It seems to me that we will have to get together, and if the range man continues to refuse to get into the work for results we will have to provide means whereby we can force him to so isolate himself and his cattle that he cannot hold back this work so necessary to the future development of our State. The eradication of the Texas fever tick is the one great work that we as an association of dairymen should make every effort to

bring to a successful issue. It must be first and paramount in our minds, collectively and individually, and none of us should stint neither time nor what resources we may have at our disposal, to bring tick eradication to an accomplished fact in every nook and corner in our State. Those of us who are fortunate enough to be operating under tick-free conditions and know what great advantage we have over our ticky brethren should not lay down and say, "Oh, well, I am all right now; let the other fellow work out his own salvation." We can't do that, folks, and we must not.

LEGISLATION

As the dairy industry grows in the State of Florida we will have legislation coming up that will be necessary to properly protect ourselves and the consumer. We should as a body be prepared to support any law that will tend to help the industry, and in most cases initiate necessary legislation. Tick eradication, of course, comes first; however, we have conditions here in Florida today that need some control under the law. At the present time we have coming into active competition with whole fresh milk, a re-made or emulsified milk, that is in most cases sold to the consumer as fresh milk with no mark to identify it as a substitute for whole milk. This is a very serious condition and one that is likely to embarrass the industry to a very marked extent. This class of product can be sold for a great deal less than the cost of producing whole milk, and will eventually put many dairymen out of business. I feel that a law should be placed on the statute books prohibiting the distributing of emulsified or re-made milk without it being properly labeled as such. Other legislative needs are imperative to help in the growth of the industry, but this can be taken up at the proper time during our sessions here.

EXPERIMENT STATION AND AGRICULTURAL COLLEGE

As the growth of the dairy industry progresses, and even today, we are continually in want of knowledge as to the best forage crops, pastures and feeds to grow here in this climate for our cows. Combination of feeds, and the mixing of grains so as to incorporate our home-grown



Herd of Cattle, State Farm, Ralford.



grains to advantage, should be furnished us by our experiment station. The training of men to carry on the growing industry is very important. It will be but a very short time when the milk production of our State will be so great that we will have to find the best way to manufacture this surplus to the best advantage, and the experiment station should be ready to tell in what manner we can handle this surplus most profitably, and the college should be equipped with facilities for the training of men to go out and operate these manufacturing plants. With the present facilities at the disposal of the Experiment Station and Agricultural College we can hope for but little. The returns derived from the investment necessary to properly equip these institutions at Gainesville can never be computed, for they mean so much more than mere returns. With a great commonwealth like the great State of Florida to so meagerly support such important institutions as the University and Experiment Station seems to me to be gross negligence. Let us emphatically endorse and actively support any movement that will tend to properly support our institutions of learning and Experiment Station. We can then hope for results, and among the many benefits that we will derive we will have a proper corps of expert field men in the field helping us to develop our business and extending the dairy interests.

DAIRY ASSOCIATION

A strong association of the dairymen of the State of Florida will do more than any other one thing to help us get what we need to conduct our business successfully. In attending our meetings we not only help ourselves in our everyday life and work, but also the industry as a whole. We should ever make an effort to get new members in to the association, so that in the future, when one thinks of a dairyman in Florida he knows that he is a member of the Dairy Association, actively supporting the industry of the State. We will then be able to support a secretary that will be able to devote all of his time to the interests of the men and women who milk cows. It will be but a comparatively short time before we will be forced to have the services of a paid secretary to look after our interests. Such an arrangement will place our association in a position to demand recognition in what-

ever it undertakes, but we must also have a large membership. We should all become a committee of one in soliciting membership. We have many important matters coming up for action in our next legislature and the various municipal bodies that will need our attention; and when we can go before them with a large and active membership our representatives will carry some force and weight with them in their recommendations.

In conclusion I wish to say that our most important task is to get in behind tick eradication with all the power we possess; carefully consider the advisability of securing legislation favorable to the future development of the industry; actively support our University, Experiment Station and every other institution of learning in the State; and last but not least, support and actively work for a dairy association that will command the attention of the people of the State of Florida.

DEVELOPMENT OF HIGH-GRADE MILK TRADE IN CITIES

By V. M. GERRARD, Orlando

I came from Cincinnati two years ago and about eighteen months ago became interested in the dairy industry through buying what is known now as Orangehurst Farms. At time of purchasing farms there were eight cows included, and I could not find a market for all the milk they produced. I increased the herd to thirty-two and in March of this year increased it to seventy-three. It is my intention to have a herd of 200 cows. The dairy farm equipment is of the highest quality and the farm can qualify to sell certified milk. We wash the cows from head to tail twice a day and the milkers have clean white suits every morning. The milk is strained, cooled, and then packed in refrigerator cases in the delivery wagons. On October 1st we will install ice-box delivery to every customer. All cows are free of tuberculosis. At present the milk supply does not equal the demand, resulting from a systematic advertising campaign in the daily newspapers and moving picture theatres. Within two weeks after the advertising campaign started I had received 562 calls for milk.

Most of my herd are grade cows and I do not intend to put any money into pure-bred, susceptible cows if the cattle fever ticks are going to continue. Every morning the woods cows, heavily infested with cattle ticks, graze along the fence just outside of my pasture and it is impossible for me to absolutely keep my cattle from becoming infected with ticks under existing conditions. A year ago I had started for Vermont to invest \$25,000 in a herd of pure-bred cattle, and while waiting in New York City for train connections received a telegram from a friend in Orlando, advising that some of the cattle-tick friends had gotten together and agreed to protect the ticks against eradication, so I cancelled remainder of my transportation and came back. This last summer I started to Ohio to buy some pure-bred cattle, but while in Cincinnati decided to wait until the cattle tick menace is removed.

DISCUSSION

H. S. Pennock: "In Palm Beach county we now are released from tick fever quarantine. In the early history of dairying there, however, I lost a number of fine animals from tick fever and before dipping vats were in use hand-picked the ticks from my cows the best I could. Now we are able to bring in the finest cattle grown and they thrive on our farms. I claim that if a dairyman does not advertise his products he is ashamed of them. We ought to advertise the need for proper legislation."

V. C. Johnson: "The Dairy Association of Duval county started an advertising campaign just before the tourist season closed last spring and figured that the collective advertising returned the dairymen five cents for each cent invested by creating a market for the milk supply. The matter of cattle tick eradication and food value of milk should be advertised."

C. H. Willoughby: "Sell cream and develop a trade for skim milk."

V. C. Johnson: "We should not advertise skim milk as a beverage, but convert it into by-products, as cottage cheese or commercial buttermilk containing one per cent of butter fat."

Mr. Nielsen: "The dairymen should have a year-around price for their milk. While pasturage is more luxuriant in summer, the additional ice expense is important."

TUESDAY—AFTERNOON SESSION

PROGRESS OF OFFICIAL COW TESTING WORK IN FLORIDA

C. H. WILLOUGHBY, *Professor of Animal Husbandry,
College of Agriculture*

The cow-testing work was begun in Florida in 1916 when M. A. Milam and the Agricultural Experiment Station each put a cow on official test. These tests are under direction of the National Breed Associations in co-operation with the College of Agriculture. The work is largely a labor of love on part of the inspectors, as there is no appropriation for salaries. We usually get some progressive dairyman in the neighborhood to make the inspections and file reports, which are then sent to the breed association in which the test cow is registered.

The champion Guernsey record in the Southeastern States, from Virginia around to Texas, was made by Jose de Lorraine on the Loxahatchee Farms, West Palm Beach. She produced 12,071.2 pounds of milk containing 711.53 pounds of butter fat in 365 days.

The Jersey record for Florida is held by Noble's Belle of Covington 300265, owned by M. A. Milam, Miami. She produced 10,214.4 pounds of milk containing 529.98 pounds of butter fat in 365 days.

Magnolia Lass 331310, on Magnolia Farms, Muscogee, is second on the Jersey list, having produced 9,473.5 pounds of milk containing 506.2 pounds of butter fat in 365 days.

Altogether 15 Jerseys have made the Register of Merit class and 2 Guernseys have made the Advanced Register class since the work was established in this State. At the present time there are quite a number of cows on official test in various parts of the State, and in addition some of the breeders have bought cows which were admitted to register before being brought to Florida, so the number of high-class cows in Florida is increasing.

It might be desirable to establish a Florida register of merit for grade cows making certain records, so as to encourage saving of their offspring for breeding purposes.

DISCUSSION

Several dairymen objected to lowering the standard by registering anything except pure-bred cows. However, they endorsed the formation of cow-testing associations to determine which of the cows are worth keeping in the herd and which of the heifer calves should be raised for breeding, but it was agreed that all grade bull calves should be vealed. Some of the cows are star boarders and every effort should be made to know just how many pounds of milk and content of butter fat each cow is producing.

NECESSARY EQUIPMENT FOR PRODUCING GOOD MILK

J. M. SCOTT, *Animal Industrialist, Agricultural Experiment Station*

It goes without saying that the foundation of the dairy industry in all communities, States or counties is the cow that gives a liberal flow of good milk for not less than nine months and better, ten months out of every twelve; but the cow is, after all, only a machine, and a very delicate and complicated one at that. Hence, to get the best results, the character and amount of feed given must receive serious consideration.

The choice of the breed is not as important a consideration as the selection of the individuals that make up the herd that produces the milk. The feed, no matter how good it may be, will not produce the quantity of milk necessary to be profitable unless the cow to which it is fed has the capacity and ability to use it for the production of milk. Every dairyman who has been in the dairy business very long knows to his sorrow that there is a wide variation in the ability of cows to give milk.

The selection and use of feeds is another very important consideration, as the feed has a marked influence on the quality of the milk. We do not mean by this that the percentage of fat in the milk is influenced by the feed,

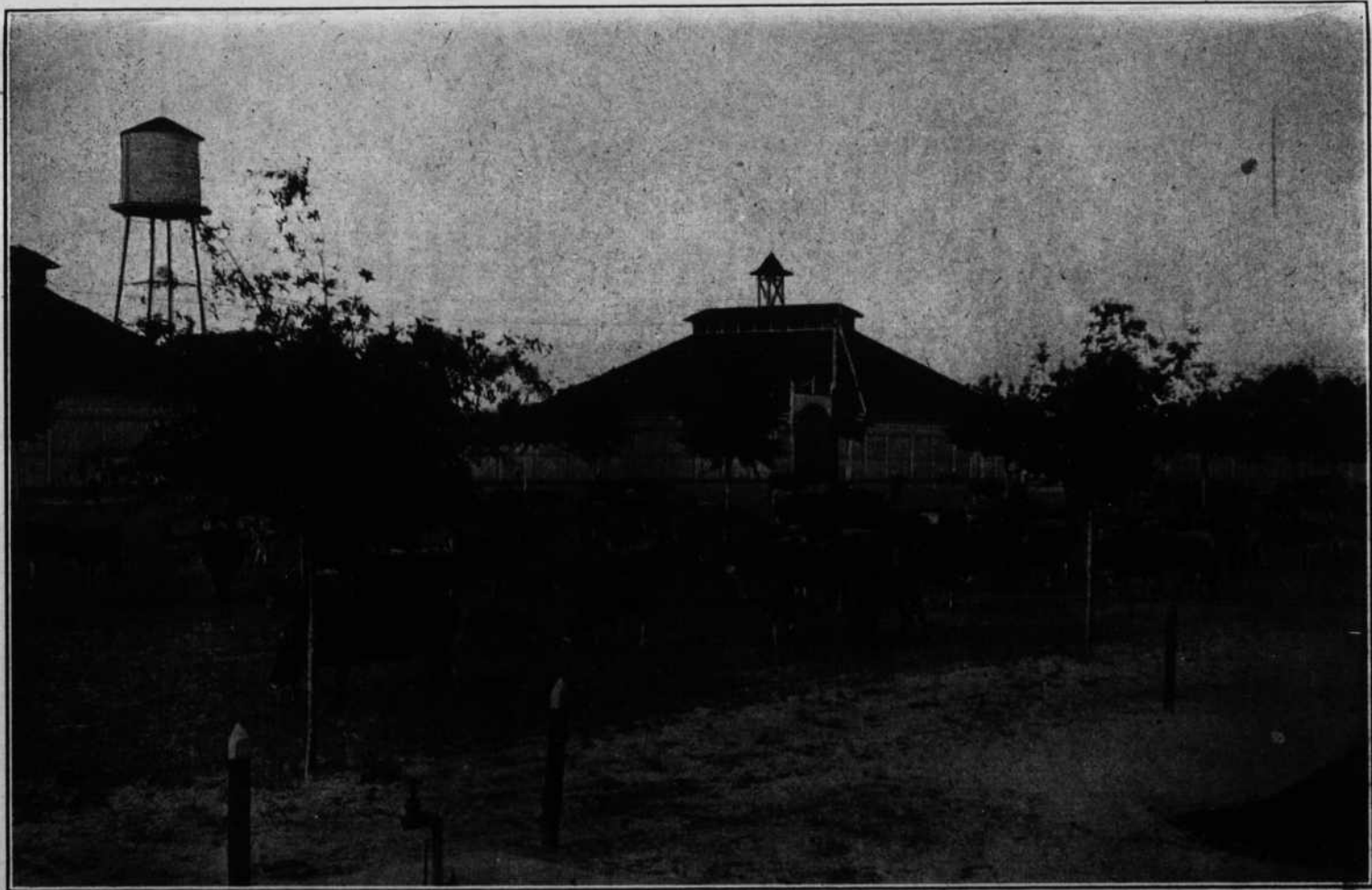
but rather that the flavor of the milk is easily and quickly changed by the character of the feed given. Any feed which has a strong odor or flavor, unless fed with a great deal of care and judgment, will impart its characteristic flavor or odor to the milk. For example, a cow fed onions will produce milk with a distinct onion flavor, or the feeding of cabbage will give milk a cabbage flavor. This may not decrease the flow of milk, but will seriously affect the quality.

It is well known that the dairy cow must be well fed in order to produce the maximum flow of milk. Approximately 60% of the feed given is required to maintain the ordinary functions of the body and only 40% goes toward the production of milk. Hence the necessity of giving a liberal allowance of good, nutritious feed if the maximum production is to be obtained. However, there is always a wide variation among animals in the amount of milk produced, and to give more feed than is necessary to produce the maximum milk flow is unprofitable. Some cows produce only the same amount of milk regardless of any increase in the amount or change in the kind of feed given. It is always important that the feed supply should be nourishing, easily digested, palatable, succulent and appetizing.

THE MILKER AS A FACTOR IN PRODUCTION

Good cows and good feed are two important factors in dairying, yet a great deal depends on the milker. Good cows plus good feed plus a poor milker equals failure. To produce the maximum flow of milk the cow must be milked regularly at the same hour each morning and night. In addition to regularity it is important that she be milked dry each time. The inclination of the cow is to produce no more milk than is needed by the calf, and cows that have always nursed calves, rarely, if ever, become good milk producers.

Kindness is perhaps one of the biggest words in dairying. This applies particularly to the milker. The qualifications of a good milker are, in short, a liking for the work and the knowledge of the machine—the cow he is handling. The man who likes dairy work and understands the mechanism of the cow is almost always sure to make a good milker. A man with this knowledge



Herd of Cattle, State Prison Farm, Ralford.



knows it is not profitable to chase a cow an hour or so each day with a dog, or curry her twice a day with a milking stool. Such treatment is not conducive to the maximum flow of milk.

To be successful the dairyman must know how to breed animals successfully. He must also know how to feed them and care for them. He must have a good, practical knowledge of animals. He must be observing, so that he may note anything unusual when looking over his herd. He should recognize and diagnose immediately any disturbance in the animal, and remove any factor that might cause milk of poor quality or decrease its flow. The producer of milk must be acquainted with milk and know how to handle it.

THE BARN

The dairy barn with a lot of expensive fixtures is not absolutely necessary. The important requirements here in Florida are a good roof that will keep out the rain; a good floor that is easy to clean and keep in a good, sanitary condition. If the arrangement of the barn is to have the cows all head toward the center of it, the four sides can be boarded up to a height of about four feet. Above this is left six feet of open space. Screening the dairy barn is an unnecessary expense. The money spent for screens could be used to better advantage in keeping the barn and the yard surrounding in a more sanitary condition. If the manure and yard surrounding the barn is gathered up every other day there will be very few flies. These can easily be kept under control by poisoning. There are a number of fly poisons on the market, or they can be quickly made, and will give very satisfactory results. These poisons can be sprinkled on the floor each morning an hour or so before cleaning. When the barn is washed and cleaned the flies can be swept out.

THE BARN YARD

The selection of a site for the location of the dairy barn is seldom given due consideration. The location should be the first consideration, for the reason that it is very expensive to change locations once the barn is located and built. It should be located where the surface

drainage is ideal. A poorly drained barn-yard will be the source of a great deal of the dairyman's trouble so far as producing good milk is concerned.

The milk room should be arranged so as to allow as much sunlight as possible. This is for the reason that sunlight is one of the best disinfectants, and, by the way, the cheapest that can be had. The barn should also be equipped so as to have a liberal supply of water available, both hot and cold, and in addition, steam, so that all of the dairy utensils can be thoroughly sterilized each day. The source and supply of water for use in the milk room should be given special consideration. The water should be as pure as it is possible to obtain. Care should be taken to see that the water is not contaminated after it leaves the source of supply until it reaches the milk room.

Not only is it necessary that pure water be used, but everything in and around the milk room must be kept clean, even the man who handles the milk. Remember, there is no substitute for cleanliness.

HEALTHY COWS

The health of the cows in the herd is of first importance. It is not possible to get good milk from unhealthy cows, neither will unhealthy cows produce the maximum flow of milk.

If the cows in the herd do not produce the maximum flow of milk it will not be produced as profitably as it should.

DISCUSSION

Several dairymen challenged the statement about having a screenless milking barn, but a number of others came to the defense and told of results without screens. Sanitation is worth a lot more than screens to prevent flies breeding. A good fly poison recommended by Professor Scott is a tablespoonful of formaldehyde in a pint of milk, sprinkled over the barn floor immediately after cows are turned out. Two hours later the flies will be dead and should be washed out of the barn.

THE VALUE OF MILK AND DAIRY CLUB WORK IN FLORIDA

MISS MAY MORSE, *Home Dairy Agent*

I would hesitate to have a survey made in Florida of families not having fresh milk, as experience has shown that the proportion is very large. The dairymen should stress the food value of milk in all of their advertising. We have milk clubs in 16 counties and the results are very encouraging.

Mr. F. C. Groover, of Jacksonville, has been very influential in arousing greater interest in the dairy industry in this State through putting up valuable cash prizes to be awarded in the milk club contests last year and this year. The boys and girls are doing better work in the milk clubs than their fathers and mothers.

I am not going to make a speech or read a paper, but only give a summary of my work and conditions as I find them.

I am very much of a Quaker. The spirit moves me to be on a vacation, but I felt I could not afford to miss the help and inspiration this meeting would bring me.

The food value of milk is a well-established scientific fact. No single food substance or combination of food substances gives the same quantity and quality of nourishment when compared in amount purchased for a dollar.

Dairymen have been slow to make use of this knowledge to promote their interest, but it is an entirely legitimate use, as the public would be greatly benefited by the increased use of milk.

There are 120,000 under-nourished children in the schools of one of the leading Middle Western Dairy States (Iowa) because dairy products are sold and substitutes or none used at home.

As we are developing our dairy industry let us see that the home is supplied first and only the surplus marketed. We need more milk in Florida homes. There are under-nourished children right here in our own State.

The science of nutrition now recognizes other factors in an adequate diet than the five food principles commonly known.

According to the best authorities, we must have milk in the diet of children and adults as well to ensure an

adequate amount of these dietary essentials, known as vitamins.

There is a great need for better marketing facilities. One West Florida county has hundreds of gallons of milk that practically go to waste, which the farmers have never been able to put on the market. Another county, I am told, made considerable preparation in the way of purchasing stock and equipment for marketing milk. The market failed and the farmers now have the stock and products on their hands, and no market.

Another instance the market failed; the producers, to save themselves, made butter. At last account there was a possibility of having to ship this butter to New York to sell it; and I am assured that the butter was good. This report has also come to me, that wholesalers in a certain section, in order to maintain high prices, dispose of a certain amount of the milk they receive by dumping it in the sewer.

And this brings us face to face with the obstacles and conditions with which we have to deal. I need not enumerate these, as they have already been discussed. But I want to point out a few things that have been impressed on my mind in the course of my efforts to interest the people in dairy work. If all good pure-bred and grade dairy stock in the State that is for sale could be listed, the prospective purchaser could secure this list and know something of the supply available. If we are going to encourage the average farmer to increase his dairy activities, he sorely needs help and guidance in meeting conditions as described above.

The milk club work has shown which are the profitable cows owned by the members, and we have records of 38 cows which have produced 3,000 pounds or more per cow during seven months' period.

The records for last year's milk clubs show a great variation in cost for feed per month per cow. Orange county headed the list with an average of \$17.78 per cow per month for purchased feed, but showed very little for feed grown. Jackson county was lowest with no bought feed and \$3.05 for home-grown feed.

BUSINESS

A motion was made, seconded and unanimously adopted that the resolutions committee be instructed to prepare a resolution expressing appreciation of the encouragement Mr. Groover has given to the dairy industry. President Nielson then appointed the following as members of the resolutions committee: E. H. Long, H. S. Pennoek and J. M. Scott.

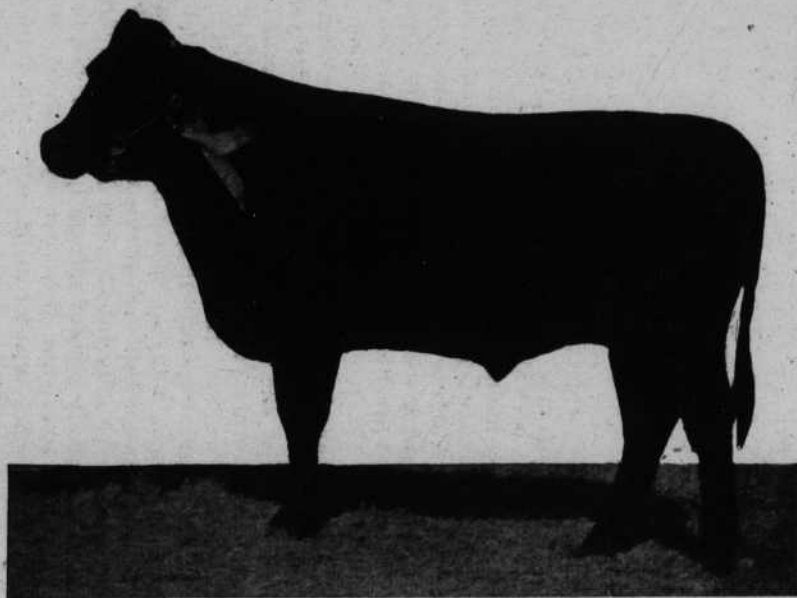
PASTURES AND THE DAIRY INDUSTRY IN
FLORIDA

H. A. MAHOOD, *Ratford*

I will take up the subject of pastures first, inasmuch as it is of vital importance in connection with the dairy industry. Without providing good pasture for the dairy herd (this of course includes soiling crops), which will be a dependable source of green forage throughout each month of the year (unless you have sufficient ensilage to feed your dairy herd twice daily, or fifty to sixty pounds per cow), I do not see how dairying can be carried on successfully.

In this State we are fortunate enough to have a climate that will enable us to grow green forage the entire year. Putting this against the North's bare seven months, it would seem that we are very much favored, and there is no doubt but that we are. It only remains for us to take advantage of our great opportunity, but being favored as we are in many ways, many of us are unwilling to make the effort which would lead to success with our dairies. Of course, you may be plugging along and possibly making both ends meet, but the kind of success I mean is not only paying your bills and your way, but by getting better cattle, cultivating more land, growing more feed, improving your farms and bringing them up to a higher state of fertility and productiveness as well as your dairy cows, that's what we should aim to do.

If you always intend to run your dairy herd in the woods you need never expect to make very much of a success. Well-bred dairy cattle, or any other kind, will not bring you much of a return on this sort of a pasture. The average dairy cow wastes more energy in foraging



538

Anthony Farms—Jim, 26 months old.

on woods pasture than she obtains in pursuit of it; besides, it ruins her digestion to fill her up with the coarse and tough natural grasses of the woods. Of course, there are exceptions as to the locality, but I am speaking of the general run of natural woods pastures. My experience is, that they will not keep yearling heifers in even a fair condition, let alone a good dairy cow. There is a short time in the early spring, before the grass becomes toughened, that young stock will do real well on it, but it doesn't last long, and if you want to grow out your young cattle and make future dairy cows that will be worth while, you will not turn your young stock loose on this sort of pasture, to sink or swim. It is in your young cattle that the hops of success lies, and they cannot be given too much care.

The great question before us today is, what shall we do to feed our stock to the best advantage? I shall not mislead you to think that I am able to solve this question for all, or any of you; I am simply giving my opinion as based upon the short experience of two years which I have spent in Florida.

I am supposing that most of you have a reasonable-sized farm. Some of you have a large acreage. I would say that the main issue with the dairy farmer is to raise sufficient succulent feed to supply his dairy herd. It may not be feasible for some to plant permanent pastures; your farm may be too small, or your land too good, and might better be planted to soiling crops, which you cut daily and feed your cows in troughs, in a lot of sufficient size as to give them ample room to feed and exercise. As a matter of fact, it is better to cut your farm up into small fields and keep moving your feeding operations from one to the other, plowing up the one you have sufficiently tramped and fertilized, and putting in some forage crop. However, if you have the land available, whether it's poor, low or stumpy and rough, it should be your greatest endeavor to get it broken, the tough native grasses turned under for humus, and after it becomes adapted, through disking and working, then set it out to one or more of the suitable grasses which we have. It is true there are several good pasture grasses in Florida. The best known is the Bermuda grass. It seems to thrive anywhere, but of course the better the conditions the better the growth. Bermuda will grow right through the

hot summer and is always good grazing. If you once get a good stand you can hardly destroy it. It thrives very well, too, on low land. The cold weather deadens the tops for a while, but it will put out early in the spring and be thicker and better than ever.

There is another grass, however, which I believe is far superior to the Bermuda. That is joint grass. This may be known in some sections by a different name. I have heard some call it cane grass (not meaning maiden cane). Its habits are a great deal like the Bermuda in that its runners lie very close to the ground. It has short joints from which it sends out roots below and shoots above, from six to eighteen inches high. It is much more excellent and tender than Bermuda. Its shoots or stalks are about the thickness of good cat straw and it is a most prolific grower. After it once gets a firm hold in a field it is hard to destroy entirely, but crops may be grown right through it, such as corn or sorgum. The only thing, after your corn is pulled and you are ready to turn your cows in upon the field for pasture, instead of almost dead crab and other grasses, you will find the joint grass has been busy since you laid by the crop, and you will have a valuable stand of green and tender forage, which will afford an excellent pasture for some time and which stays green all winter except in every severe weather, when the tops of the shoots die down, only to recover very quickly. It is particularly adapted to low land. (In writing of this grass I am giving chiefly the experience of Mr. Joel Griffith, who has farmed near Sapp Station for a long time; in fact, he was born on this farm fifty-eight years ago and has resided there all his life.) (Exhibit grass.)

In South Florida you have Para grass, which no doubt is superior to any, where the soil and climate are favorable. I do not know how this grass would thrive in the flat woods country or the north central section. There is no question in my mind but that we can have plenty of pasture the whole year round if we will only manage rightly. About this time, or a little later, most of you have bean fields to turn your cattle in upon. From my observation I would say you hold your cattle off too long just for the sake of maturing all the beans. Mostly the vines are dead and most of the grasses. You have a tendency to hold them back for winter grazing. Would it not be better to turn them in just as soon as you can get

your corn off, while the vines are yet green and the beans not so tough, and just as soon as they have one field eaten out pretty well, disk it, plow it and plant your winter pasture? You should have something in by the end of September and continue to plant as many of your fields as you are able. For winter pastures there are a host of things that will make good, such as oats, rye, barley, vetch and others. All do well sown in broadcast drills, unless your land is low. It would be better in this case to ridge up and sow in close rows, say three feet apart. This gives room for light cultivation and the cattle will not trample so much under foot in grazing, but as a rule walk in the middles, nibbling as they go. For small patches and lots which have received heavier supplies of animal fertilizer there is nothing you can plant which will turn out more winter forage than dwarf Essex rape. It will show up in the milk pail as nothing else in that line. This may be sown along in late September and will be ready to graze December 1st or before. The stock will eat the leaves off the stalk, which will put out again and again. Rape may be sown any time up until hot weather.

Another article of feed to sow in your better lots in the fall and winter is rutabagas. They are a little slow to get started, but by having them grown and ready to pull late in the spring they will hold the dairy cow up to her full production.

In the early spring, just as soon as the possibility of a frost is over, one of the best crops for early pastures, soiling, or for ensilage, is pearl or cattail millet. It should be sown in drills, about three or three and one-half feet apart. It is a very rapid grower and may be pastured when it reaches twelve to eighteen inches in height, or cut for soiling, as may be preferred. It grows, if allowed to mature, from ten to twelve feet in height and will produce upwards of ten to fifteen tons to the acre. The stalk is always tender and succulent. If cut before it gets too tall or shoots its head it will stool out again and again. Cattail millet may be planted and grown right through the hottest weather. The State Farm has a section of a large field just maturing. Our dairy cows did very well on this crop. (Exhibit.)

There are many volunteer grasses which make good pasturage during the summer, such as crab grass, carpet grass and others. Beggar weed is hard to beat either as

pasture or hay, it being one of the legume family. However, there are times when our crops run short between seasons if we have not planned carefully, and it is then that the Bermuda or joint grass pasture would become a great asset.

Almost if not quite in importance is the silo, providing you have ample crops with which to fill it. One feed of ensilage in the evening, 365 days in the year, should be the aim of every cattleman. It is not only economical and beneficial insofar as the food value is concerned, but the cow, like every other creature, should have ample time to lie down, rest and chew her cud to her heart's content. If, after your evening's milking is finished and the cows have received their usual grain ration, you turn them out again in order that they might graze half the night to satisfy their appetites, it is in my opinion a very poor policy. How much better will a cow do if she may go out of your milking barn into a large feed lot, where in one hour's time or more she can fill herself with good, well-kept ensilage and satisfy her thirst with pure and cool running water, after which she will pick out a suitable place and lie down for the night? And even though her internal machinery may be running at full blast, her exterior portions are resting and gaining strength for the morrow's work.

I do not mean to touch on the silo particularly, but where is a better way to preserve every ounce of your crop than by putting it into a good silo? More live stock may be carried on a given acreage when crops are fed in the form of silage. It insures the utilization of practically the whole corn or sorghum plant. It preserves the succulence of the plant and has a beneficial effect upon the digestive organs. In summing up on the pasture situation I am quite convinced that the best method for those who have a limited acreage is to put every foot of it in silage crops and, if possible, feed silage twice daily during the entire season, providing shelter and shade for the cattle to rest in during the day, with access to fresh, cool water.

Now as to the dairy industry in Florida, I would say it really hasn't started. Our present dairy production is not a drop in the bucket compared to the amount imported into the State. We are told that upwards of twenty million dollars worth of dairy products were shipped into the State last year. Our market here at

home is the best in the country and will be for a long time to come. Take the State of Wisconsin with all its fine herds of cattle, still increasing, still clearing more land and making it into productive dairy farms. They have 2,752 cheese factories, 762 creameries and 67 condenseries in the State. How many have we in Florida? From the manufacturing records which I have received from the Commissioner of Agriculture I fail to find that we have a single cheese factory or condenser, and but a very few creameries which manufacture butter for the markets. Surely the opportunity for commercial dairies in the State are without limit.

There are, however, a few things we will have to overcome before we make a success as a dairy State. First and foremost is the tick, T-I-C-K, tick. That is our biggest handicap toward stock improvement in the majority of counties. Progress is being made in some counties, but unless compulsory dipping becomes a law it will not be possible to clean up the tick entirely. I believe the "no-fence law" would be a solution to the whole situation. Just as soon as we get rid of the "horns and hides" that roam up and down our highways and lanes and wind up the day by bedding down on our front walks, then and only then will the tick see the "setting of his little sun," and we will be free to ship in better cattle for both dairy and beef purposes, and start something going in this State. Those who have fought the good fight and are established here will then be in an excellent position to reap the benefits.

But while we are still handicapped with the tick and all that goes with it, we have great opportunities now for bigger and better business. The first move in this direction is to improve your herd. If you cannot afford to take the risk of shipping in pure-bred cows, or further do not particularly care for a pure-bred dairy, there surely is no reason why you cannot build up your grade herds, and no sire is too good even to breed to grade cows when we are looking to improvement. I firmly believe we can raise just as high a class of cattle, whether pure-bred or grade, as in any other State, and whether or not we are raising pure-bred stock to supply a cattle market, or are simply selling their products, there are many points in favor of the pure-bred cow. Would not your advertisement reading, "Pure, clean milk and cream, from a pure-

bred, accredited and tick-free herd," appeal more to the consumer than just plain milk from plain cows? In making a comparison of pure-bred and grade cattle, for an example, we have at the State Farm a cow known as No. 27, "Alice," breeding unknown. "Alice" is a remarkable cow both as to looks and performance. No doubt she has some very good blood in her, but no one seems to know about her, except that she has been in the herd a long time. She freshened last on November 10, 1919, and received exactly the same treatment as the other cows in the herd, which at times during this period has been none too good. Up until September 10, 1920, milking 10 months, twice daily, she has given 8,514.2 pounds of milk, yielding 428.89 pounds of butterfat, or 504.49 pounds of 85% butter. At the present rate she is milking, by October 9th, making 365 days, she should have to her credit 9,500 pounds of milk, 480 pounds of butterfat, or 565 pounds of 85% butter, and will have carried a calf 224 days of this period. The point I wish to bring out is, what would she have been worth were she a pure-bred? I say have been, as she is just a little past her prime now. The unfortunate part of it all is that "Alice" has a mania for having bull calves. She has not been known to have a heifer calf.

DEVELOPMENT OF THE DAIRY INDUSTRY IN FLORIDA BY CO-OPERATION

C. A. MARTINI, *Agricultural Agent, Seaboard Railway*

The development of the industry in Hernando county was started by one of the bankers financing the purchase of dairy cattle. The farmers put up one-fourth of the cost price of the cows purchased, the banker retaining title to the cows until the accounts had been cancelled by payment out of the milk sales.

The business men in Brooksville put up a creamery and cooling station. One of their markets went bad on account of strikes, which threw large numbers of people out of work, but they have handled their milk supply profitably. At present they have about 80 cows and want to buy 40 more, so they can have 120 in full milk by December 1st. Before the dairy development started there were babies in that community suffering for lack of fresh milk, because their parents were unable to secure it.

All cows purchased must be from tick-fever quarantined territory, as no systematic tick eradication work has been done in the county and tick-free cows would soon die from tick fever.

ENTERTAINMENT

The convention then adjourned to the Phillips Theatre as guests of the Orlando Board of Trade. As a special attraction on the regular program a number of views showing conditions of carcasses from tuberculosis diseased cattle were flashed on the screen, while Dr. J. G. Fish briefly explained the pictures. Then a reel of moving pictures furnished by the U. S. Department of Agriculture, showing life cycle of the cattle fever tick and improvement in quality of cattle after ticks had been eradicated, was run, after which the regular screen program was continued.

BANQUET

The banquet served by the Orlando Board of Trade, beginning at eight o'clock, was greatly enjoyed by the members, and after the elaborate course dinner had been concluded, the candy for the ladies and cigars for the men had been distributed, the speech-making began.

J. Hughes served as toastmaster and Judge J. M. Cheney, of Orlando, was called upon to open the feast of reason. He told of his experiences in trying to get any fresh milk during the first few years he resided in Florida and finally bought a dairy cow to supply his needs. He is still an admirer of pure-bred cattle and an enthusiastic milk consumer.

Members who were too bashful to volunteer a speech were drafted for the occasion and a large amount of humorous information was obtained.

WEDNESDAY—FORENOON SESSION
VALUE OF TICK ERADICATION TO THE DAIRY
INDUSTRY

V. C. JOHNSON, *Dinsmore*

The subject upon which I have been asked to address our association this morning—"The Value of Tick Eradication to the Dairy Industry"—is a matter of vital importance, as I see it, to the dairy business.

In Funk & Wagnall's New Standard Dictionary the word vital is defined as something essential to life, necessary to existence or continuance; and we shall find that this definition applies to the eradication of the Texas fever tick as related to the building up of the great dairy industry which we should have in Florida. The fact that a great and prosperous dairy industry in any State or community affects the health and the business prosperity of such a community very materially gives us who are engaged in the dairy business the right to ask the support of every citizen of our State to the work of tick eradication, which is the first and absolutely necessary step toward the building up of the dairy herds in any tick-infested area.

Let us see where this insufferable handicap of the Texas fever tick strikes at the very fundamentals of the business through which we are earning our livelihood.

You will all grant that in order to make a success in any line of business a man must be in a position to meet competition, and in our work of producing milk I think we have proved the impossibility of meeting it with the degree of success which is necessary to any general expansion of the dairy interests of our State.

In other words, we must be able to produce milk at about the same cost as our competitors (and I think anyone with open eyes must realize that with present-day means of transportation and the many forms of handling milk, such as condensed milk, which is handled in barrels, and the dried milk powders in barrels or other large containers, by many of our large distributors, as well as the small cans of condensed, evaporated and powdered milk which we see so largely in evidence at any retail store, our competitors cover a very large territory). I say we must enable ourselves to lower the cost of producing milk

unless we are able to be satisfied with handling a very small part of the requirements of our population.

There is no question but that good fresh milk in its natural fluid form is in the best possible for human consumption, or for use in the home, or for manufacturing purposes; but the largest purchasers of our products have found it impractical to obtain a sufficient supply of milk in this form anywhere in our State to fill their needs at any price, and have been driven to buy milk in these other forms referred to.

I am going to ask you to bear with me while I go into a little personal history as a practical dairyman for the past ten years engaged in the production of milk in the vicinity of Jacksonville, Florida.

In the fall of 1910 my two brothers and myself left the State of New York, where one of them suffered exceedingly with asthma every winter. We came to Florida in search of a climate that might relieve his suffering, and after a stay of nearly a year it appeared that a complete cure had been effected.

As I had been engaged in dairy work in eastern central New York, I naturally interested myself in looking into the dairy conditions surrounding us in and near the city of Jacksonville, and I was somewhat unduly impressed with what appeared to be the extravagant prices received for milk and its products. Of the Texas fever tick at that time I knew very little and failed entirely to realize as we entered the dairy business at Dinsmore, ten miles from our market, what the tick meant to our venture, and how it would hinder or make impossible every attempt at the betterment of our herd of Florida raised cows.

On our little farm of 70 acres we at once began to raise calves from our newly acquired herd, only to find them stunted in their growth as the result of tick infestation and inferior parentage. We wrote to Washington for information in regard to the tick and the condition which we were facing, and I well remember, as the result of reading these early bulletins, with their cuts showing the methods of freeing a herd of ticks by a rotation of pasture lots or pens, and the use of Beaumont oil (I think I have the name right), which contained a high percentage of sulphur, etc., and was recommended to afford some relief by sponging the heavily infested part of the cows therewith.

An oil analyzing as nearly as possible like the above we at once obtained and found it useful to occasionally daub the worst tick-covered areas of the cow's hide with it, though it was discouraging to realize that this could never bring us any permanent results.

We also began to realize that we were prevented from purchasing additional cows and a better sire inside the quarantine area—the tick-infested portion of the State—or run a great hazard if we ventured to purchase outside, where stock could grow unhindered by the tick.

Though the first year we tried our luck with a few of cows so raised, and lost, if I have it right, six head from the Texas fever. Some of these cows we had not owned over a month before they died, causing practically a total loss to us. Others we had milked a few months.

For a herd size we felt obliged to pick a grade, as we could not find a good pure-bred bull of any breed in our section for sale at the time.

I shall not go over each step as we endeavored under those conditions to improve our herd with the buying of a couple of pure-bred bull calves from the State of Pennsylvania, and our continued fight with the use of the oil solution to lessen the number of ticks which were sapping the vitality of our calves, through the successful raising of which seemed to be our only hope.

In the summer of 1917, Dr. Smith, working under the direction of the U. S. Bureau of Animal Industry, interested us in the improved methods of fighting the tick pest to the extent of building a dipping vat on our place and dipping our herd, since which time we have dipped our cattle from week-old calves to the oldest grandmother on the farm. The results have been wonderfully beneficial. By dipping our calves and young stock every 14 days throughout the summer months and even in the winter occasionally, we have been able to notice a very marked improvement in their growth.

Where before we dipped we found it necessary to supplement the range pasture upon which they graze with a small amount of concentrates, we now note a more thrifty growth and condition on the same range without a pound of expensive grain through the months when the grass is in good condition.

Our experience with the milking herd is that there is a small loss of milk after each dipping, which is far more

than made up again to us between the dipping periods. I feel that I can confidently assert that the general condition of the herd is decidedly better since we began the regular dipping of our stock.

Now, where has this brought us? As we see it, we have gone about as far under these conditions, living in a tick-infested county, as we can hope to go.

While we have an investment of some \$30,000 in our dairy and equipment, if I felt that conditions were to remain as at present, through the future, I should think very seriously of making the best disposition I could of our holdings and starting over again, making sure that I planted myself again where I could not be molested by this scourge of our dairy industry—the Texas fever tick.

Last fall I took a trip through the States of Massachusetts, Maryland and Virginia in search of a few excellent specimens of the Guernsey breed, being unable to resist the temptation to try to further develop our herd, well realizing the great hazard we were taking in bringing these expensive animals into our ticky county. We prepared ourselves by double fencing a small area on which no cattle had been kept for several years, and brought in two well-bred Guernsey bulls, an excellent Guernsey cow and a bred heifer backed by great production records of the same breed. During the past year we have been able to satisfy ourselves, through the careful watching of this experiment, that, given a chance to develop our herds unhampered by the tick, we can, right here in Florida, meet any competition from any section of the country in the matter of cost of milk production.

Certainly we have many advantages over the producers of milk in what are usually considered our great and most favored milk-producing sections of the country.

Take, for instance, the States of Wisconsin, Illinois or New York. We have a far longer, in fact an endless season in which to produce pasture or soiling crops for our herds; we have no weather cold enough to materially affect the comfort or milk-production of cows, and are practically free from the dreaded disease of tuberculosis which is prevalent in every great dairy State in the North and much more subtle and difficult of eradication than this pest with which we are contending—the Texas fever tick. What, then, is hindering the work of ending the disease, the methods for exterminating which have been

so successfully worked out and proved so practical that about 75% of the area originally infested and under quarantine by the Federal Government has now been declared free, and this vast section is now taking advantage of the opportunity to develop, as we hope soon to do, in the matter of dairy and general live stock improvement?

It is not a lack of a will to progress and improve our stock on the part of our dairymen, as has been abundantly shown at this meeting and others which I have attended.

As I see it, the hindrance comes from a lack of vision, of any faith in the future of our State on the part of our men in public office to enact laws for us, our county commissioners who decide how our county tax money shall be spent, our county solicitors and sheriffs and our courts, to whom we look for the upholding and enforcement of the laws by which we are governed—at the door of these officials (I am not arraigning all in office, you will understand, for we have many men who stand for progress and the upbuilding of our State, serving faithfully in their positions), but upon the shoulders of such men as I have described listening to small groups of men whose interests lie in standing still instead of progressing. I say, upon their shoulders rests the responsibility of holding up this crying need not only of our own business but a need which is of the deepest concern to every man and woman who cares for the development of the children of our community, for the welfare of those who are sick, and the best health and well-being of those who regard themselves as well—the eradication of the Texas fever tick, which deprives us of the most important food we know, in abundance and at a price within the reach of all.

Let every one of us, then, give willingly of our time and resources toward this work that demands so urgently our attention.

Let us be ready actively to support any legislation needed for this end, and may we use greater care to see that men of the right calibre and steadfast purpose are placed in positions of responsibility, and then give them our whole-hearted support in their efforts as they work for progress and right.

DISCUSSION

Mr. Nielsen suggested that an aggressive membership campaign to get resources and influence would be a big help in securing help in arousing the entire State to necessity for tick eradication.

Dr. J. V. Knapp said the people needed more faith, but cannot eradicate the ticks without co-operating.

R. W. Storrs gave a brief history of the live stock sanitary work and stated that the law has been upheld by the Supreme Court, so very little modification should be attempted in the future. He predicted that the wives and mothers are going to be an important factor in future elections and law enforcements, and said that all law is crystalized sentiment.

CONTROL OF CONTAGIOUS ABORTION

DR. A. L. SHEALY, *Professor of Veterinary Science,
College of Agriculture*

This was a technical discussion of the subject, but aroused intense interest on the part of those present. Before it had been concluded adjournment was taken for luncheon, but the discussion was renewed upon reconvening. A number of graduate veterinarians took part with the dairymen in asking and answering questions. Dr. Major Scofield, of Miami, told of his experiences in controlling the disease in herds which had become infected.

APPROPRIATIONS FOR EDUCATION

F. M. O'BYRNE, *Gainesville*

Mr. O'Byrne used a number of charts to show the relatively small appropriations which have been made in the past for support of Florida's institutions of higher learning, including the Agricultural College and Experiment Station.

The budget for ensuing two years provides \$10,000 for dairy cattle and extension work, the total budgets for the four institutions under direction of the Board of Control approximating three million dollars for the two-year period.

TUBERCULOSIS AND WHAT A FEDERAL ACCREDITED HERD MEANS

DR. J. G. FISH, *Tallahassee*

There are thirty government accredited herds in Florida and the State has an excellent chance to become the first free State in the Union, possibly within the next three years.

An effort is now being made to have Leon county made an accredited county, some 2,000 cattle having been tested without showing presence of the disease.

The rules and regulations for getting a herd on the accredited list were read by Dr. Fish and will be furnished free of cost upon application by any person in Florida.

The probabilities are that the conditions governing entry to accredited herd list will be more restricted in the near future in order to properly protect the industry and make the list absolutely reliable.

MOTORCADE

The convention recessed at three o'clock in order to give the members an opportunity to accept the hospitality of the Orlando Board of Trade in a motortrade to dairies owned by Loring Brown, Datson & Sons and V. M. Gerrard. At the latter place Mr. and Mrs. Gerrard served a buffet supper on their lawn to all the members and friends in attendance at the convention, which was greatly enjoyed by everyone. Orangehurst Farms milk in double-capped bottles was the liquid refreshment included with the supper, and the dairymen agreed that it was eligible to highest rating as a pure, fresh milk.

WEDNESDAY—EVENING SESSION

The evening session convened at eight o'clock, and the first number on the program was the address by H. S. Pennock, which had been held over from the afternoon program.

FEEDING THE DAIRY HERD FOR PROFIT

H. S. PENNOCK, *Jupiter*

Feeding a cow for profit, the first thing to do or find out is whether you have cows that will turn you a profit if fed in the best way possible. There may be a cow or cows in your herd that are not giving a profit without its being their fault. I will try and describe these cows a little later. How is the best way to find out or to know whether your cows are profitable or not? Weigh their milk. This is a lot of trouble and takes too much time, you say. Well, if you want to keep on working yourself and your family to death for almost nothing, don't take this very little trouble. I say little trouble, because it is. In the cow-testing associations all through the country the man that does the testing visits each herd just once a month, weighing the milk of each cow, and the U. S. Department of Agriculture reports that these once-a-month weighings come within two per cent of the actual amount the cow gives. It takes about half a minute to weigh the milk of a cow. That is a pile of trouble once a month. All you have to do is to decide to do it—make up your mind to do it, and then when you start you will not be satisfied with just once a month, but will want to do it as much as once a week. This weighing once a week gives you a very close idea as to how your cows are doing and keeps you in touch with each cow. To make the dairy business pay you must know each and every cow in your herd, and know her thoroughly. Get away from the idea that you can work into a profitable dairy business in six months or a year. It can't be done. It takes years, and if you cannot work and think for several years in the future you had better get out of the dairy business, because you can make a good deal more working in almost any other trade. When you have taken the weighings of the milk, jot them down and stick them up on the wall somewhere, where you can see them. It is not necessary to make out an elaborate card in putting in the day of the week and day of the month, but just simply jot the weight down, giving the month, and by the end of the year you will find you have learned a thing or two. You will say, why see, there is a cow that is only giving five pounds of milk a day. Yes, you will probably find sev-

eral like this. This kind will start to go down pretty strong along about six months after freshening, and in eight months they are giving five pounds or less. Then again you will find a cow or more that will give ten to twenty pounds right up to calving time. This is the kind you want to take care of and learn how to feed; the other kinds will take care of themselves. The ones that milk good right up to calving time will usually be in rather poor flesh unless you are an expert feeder, a feeder of register-of-merit cows. These cows that milk good right up to calving time are hard to dry off, and the temptation is very great to keep right on milking them, which, if you do and they are in poor shape, which they almost invariably will be, you have done them untold harm. A cow that has milked good for ten months or more is all ragged out; her body is depleted in more ways than one; she has drawn on the mineral supply of her body to keep up the minerals in her milk, and if she is milked right up to calving time she does not have time to or the opportunity to build her body up in these minerals or anything else her body is lacking in, and so she starts on her new period in a fagged condition, in a partially collapsed condition. This is the condition which I mentioned in the first part of the paper, in that a cow might not produce a profit and yet was not her fault, because when she starts the new milking period in poor condition she will probably not give any more milk at the start just before calving, and under all probability will not hold this amount for very long. As I said before, these are the cows you want to feed, and feed good. They ought to have at least two months' rest, and don't think for a minute that because they are not giving any milk they do not need any grain. They need grain, and plenty of it. Try and get them fat. You don't lose a thing by giving them all they need, because you will get it all back as soon as they freshen in an increased flow of milk, and a good, strong calf. And now we come to the point as to how to feed. Only general rules can be laid down in regard to this, especially in regard to the roughage. Feed all they will eat, and you must certainly raise this roughage, because if you have to buy roughage you will certainly have a hard time making ends meet. You want lots of roughage, and then still more roughage. With lots of roughage and a good variety you can cut the grain

consumption down. One has to be guided more or less by local conditions in the growing of the roughages. Corn is probably the best of all, and it will grow all over the State, and with a silo full of this one need not worry. Then besides the corn, there are the sugar canes and the new things the Agricultural Station has introduced, like the Napier and Merker grasses. The best way is to raise plenty of what you know—what you are sure will grow well, and then branch out from that. A good legume or two should be raised also to make into hay, such as beggar weed, cowpeas or velvet beans. If one grows equally as well as another, palatability should be the first thing to consider. Our experience is that they like the velvet beans the least.

The grain part of the ration is the easiest to take care of, as any grain on the market can be bought from the grain houses in Jacksonville and other towns now, and at the market price, too. The mixed grain men will come around to see you and tell you that you can save money by using their mixed feed, as it is perfectly balanced; and so they can, if you are too lazy to learn how to mix your own and want to pay them on the average of fifty cents to a dollar more per sack for their mix over your own, which you can make just as good. From experiments in the north on feeding dairy cows, it seems advisable to add some minerals to the feed mixture, principally lime and phosphate in one or more forms. This is still in the experimental stage; so this would not be a very good topic to discuss. The usual ration of grain mixture they use in the north is one of protein to five or more of carbohydrates; in Florida, though, I believe, it will be nearer one to three. And a common rule in feeding grain is to give one pound of grain to three pounds of milk the cow is giving. And if one does not know how to mix feed properly, a letter to the Experiment Station at Gainesville will bring back a prompt reply, giving the necessary information. They stand ready at all times to give a helping hand.

The dairy business, as I said before, is not a business that can be built up in six months or a year. It is not a business that you can take up for a year and then drop for a year or two and then take up again. It is the business of a life-time, and so the quicker one decides to start right and stick the sooner the profits will start coming in; and to start right you must first know your good cows,

then feed them heavily, and have a good registered bull that will give you calves better than their dams. This is one phase of the business so many overlook—the raising of the calves—and this is really where the permanent success comes in, because you cannot very often buy good ones as cheap as you can raise them; in fact, the real good ones are hard to find.

To make the dairy business profitable one must know his business just as thoroughly as the mercantile man or clothing man knows his.

To sum up, the three important things in the dairy business are: First, know your cows; know the ones that can turn you a profit; second feed these well, raising as much as possible of this food; and third, raise your own calves.

BUSINESS SESSION

The following resolutions, signed by E. H. Long, H. S. Pennock and J. M. Scott, were presented with recommendation that they be adopted, which was seconded and carried:

RESOLUTIONS

Whereas, Mr. F. C. Groover, of Jacksonville, has shown such a deep interest in the dairy development of Florida by offering cash prizes for the improvement of home dairy and extension of the dairy work in Florida;

Resolved, That this association extend to him our hearty appreciation of this very substantial evidence of his co-operation.

Whereas, It has been brought to the attention of the Florida Dairy Association that milk emulsions of various kinds are being sold in some sections of the State;

Resolved, That this association urge upon the proper authorities such enforcement of existing laws or the enactment of adequate ones as will compel the marketing of milk and cream other than whole fresh milk or cream under such labels as will clearly tell the purchaser the process through which the product has passed.

Whereas, The dairy industry of the State of Florida is so seriously hampered in its proper development by the general presence of the Texas fever tick; and

Whereas, The future development of the dairy industry and the attendant prosperity of the State are entirely dependent upon the complete eradication of the Texas fever tick; now, therefore, be it

Resolved, That we, as an association of the dairymen of the State of Florida, do most emphatically urge and support any movement furthering that end.

Whereas, This association keenly realizes the importance of adequate support being given to the educational institutions under the care of the State of Florida, particularly the Agricultural College and Experiment Station at Gainesville; and

Whereas, It realizes the imperative need of a competent dairy extension worker to assist dairymen in the different sections of the State in the solution of their varied and vital problems;

Resolved, That this association urge upon our State Legislature the appropriation of the necessary funds for the unhampered development of these State institutions along the lines for which they were created, and the employment of a dairy extension man.

Whereas, Miss May Morse has been doing such excellent work in stimulating the home consumption of dairy products, and the home testing of dairy cows, and is working so earnestly for bringing about the keeping of a dairy cow on every farm in Florida;

Resolved, That this association extend to Miss Morse their hearty appreciation of this work and assure her of our active co-operation whenever she desires to call upon us.

Whereas, There is no provision in our State laws preventing anyone from practicing as a doctor of veterinary science;

Resolved, That this association urge upon the next Legislature the importance of framing such a law as will prevent other than duly qualified veterinarians from practicing in this State.

Whereas, This association has been so heartily welcomed and so royally entertained by the Board of Trade and the citizens of Orlando and of Orange county during its third annual meeting;

Resolved, That we individually and collectively express our hearty appreciation of the many kindnesses shown us.

TREASURER'S REPORT

Treasurer V. C. Johnson reported 40 new members during the year and a cash balance of \$61.30.

ELECTION

Moved by V. C. Johnson that Mr. F. C. Groover, of Jacksonville, be elected honorary president in recognition of his efforts to help develop the dairy industry in Florida. Seconded by Dr. J. G. Fish, and Mr. Groover was unanimously elected to that position by a rising vote.

The other officers, whose names are given at front of this report, were nominated and elected in order, retiring President Nielsen turning over the chair to President Long.

Moved by Mr. Pennock, seconded by Mr. Johnson, and carried, that the constitution be amended by adding: "The retiring President shall become a member of the Executive Committee for the ensuing year."

Moved by Mr. Nielsen, seconded by Mr. Pennock, and carried, that the Executive Committee co-operate with other live stock associations and take any action they deem best to further the legislative program.

The Secretary was requested to ascertain the present laws governing sale of "process" or "emulsified" milk, which is being sold by some agencies as fresh milk, and if the dairy industry is not properly protected, the Executive Committee was instructed to include that as one of the subjects for legislative action.

Jacksonville sent a written invitation and Orlando extended a verbal invitation to the association for the next convention. The constitution provides that selection of time and place for holding annual convention shall be determined by the Executive Committee, and a decision will be announced later.

The convention adjourned sine die at 11 P. M., with the members present promising to individually work for increased membership during the coming months, so that the association can better look after the dairy interests in the State.

CORN SUBSTITUTES FOR FEEDING HOGS

Farmer and Stockman

Farmers who have not yet sufficiently built up the fertility of their new lands for raising corn can materially reduce the amount of corn fed to their hogs by substituting other feeds, many of which will do well and yield abundantly on new land.

Pastures and forage crops properly used can reduce the corn and other concentrated feeds fed to hogs from one-half to one-fourth. There are, moreover, many feedstuffs which can be substituted for the other portion of corn. Their use will be determined largely by their availability, relative feeding value, and cost per pound as compared with corn. Hog feeders, by getting in touch with the feed manufacturing industries in their section, may discover profitable substitutes for corn. Feeds unavailable for human consumption should be used as far as possible.

A number of substitutes for corn, with suggestions for their use, are given below. The feeding value, methods of feeding, and the highest relative cost of a pound of each feed to a pound of corn at which profitable substitution can occur are given for each feed. For example: A pound of feed with a feeding value four-fifths that of corn must cost at least one-fifth less before substitution is profitable purely from a monetary standpoint.

Oats after crushing have three-fifths the feeding value of corn. They can be substituted profitably for corn, therefore, when a pound of crushed oats costs two-fifths less than a pound of corn. In a fattening ration, oats should not compose more than two-thirds of the ration during the early part of the feeding period and should gradually be reduced until, during the last four or five weeks, they are entirely omitted from the ration. Oats are excellent for adding bulk to a ration and are especially good for brood cows.

Barley, when crushed, is an excellent feed for swine and can be substituted entirely for corn, even when it costs the same per pound.

Rye, when costing nine-tenths as much as corn per pound, can be substituted for corn in the ration. It should be fed ground or crushed, and is best fed as a slop.



261

Orlon Cherry King, Jr., 8th. Grand Champion National Hog and Cattle show, Atlanta, 1920, and Florida State Fair, 1920. Highland Oaks Farm, Pierce, Fla.

Frosted wheat, or wheat damaged in other ways and unfit for milling, can be substituted even when equal in cost to corn per pound. Wheat should be ground, crushed or soaked.

Emmer, or spelt, is a bulky grain. It can be substituted for corn when costing three-tenths less per pound. A partial substitution is best. This feed should always be ground and is best when fed as a part of the ration along with concentrated heavy meals to give bulk to the ration. A combination of corn and emmer proves far superior to emmer alone.

The grain sorghums, kafir, milo and feterita, may be substituted for corn when slightly lower in price per pound. They should be ground and fed as a meal.

Buckwheat can be substituted for corn when it costs one-tenth less per pound. It should be fed ground and is best as a partial substitute, for it tends to produce a poor quality of fat.

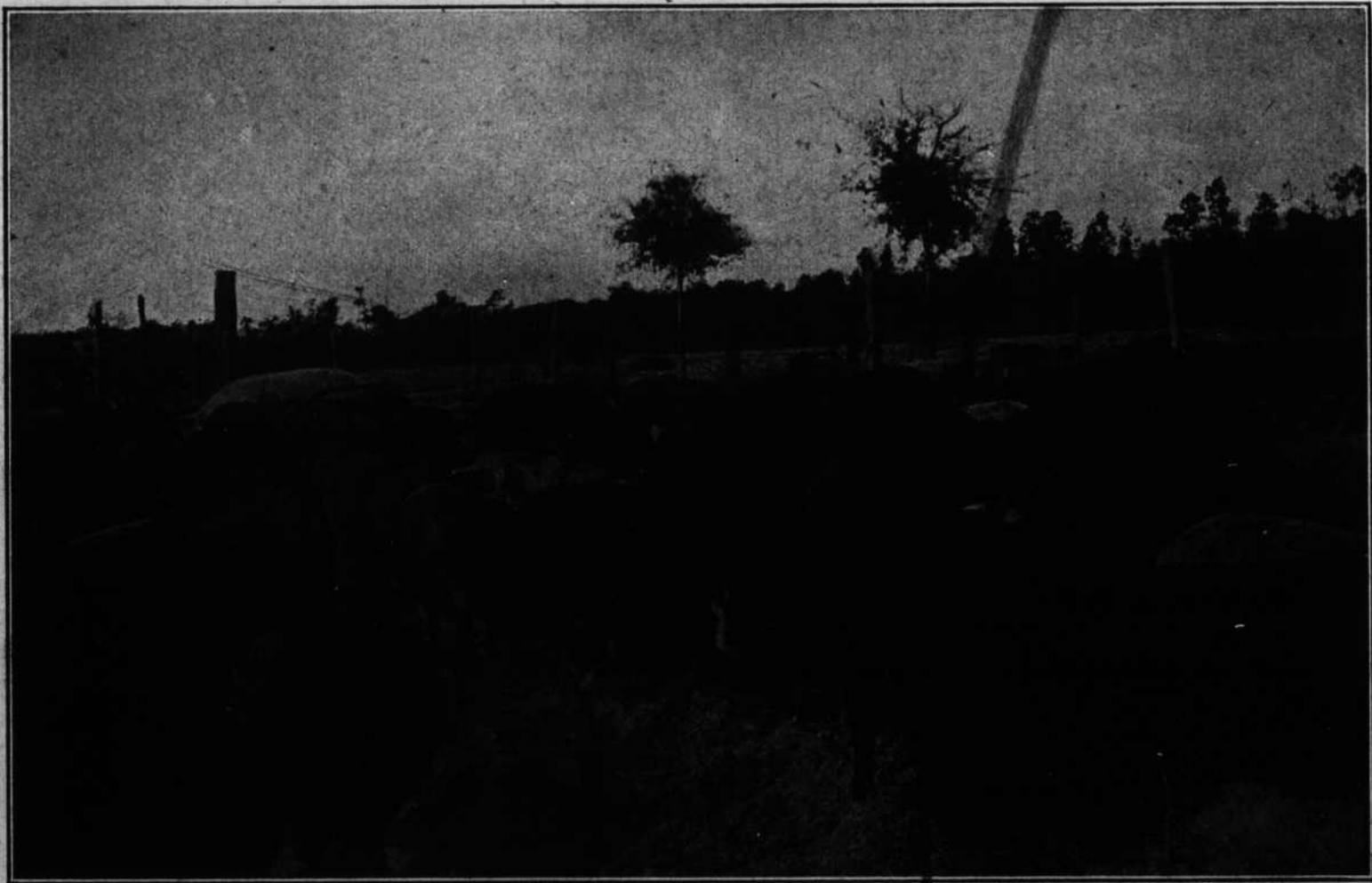
Millet can be substituted for corn when one-fourth cheaper per pound. Millet should be ground and fed always with a rich protein supplement. For fattening hogs in cold weather it is not so good and produces a soft pork.

Cull beans can be substituted for corn if below the cost of corn. Beans make soft pork and always should be cooked and salted before feeding. It is better to substitute the beans for but one-half the corn and so prevent soft pork and increase the gains.

Hominy feed or meal is a by-product from the manufacture of hominy grits for human consumption. It is excellent for hogs and can be substituted for corn even when one and one-seventh the price of corn per pound.

Wheat shorts, or middlings, are a by-product of the milling of wheat. While a feed high in protein, it can be substituted for corn when one and one-tenth the cost of corn. It is best as a nitrogenous supplemental feed and when forming but a part of the ration. Owing to its heavy, pasty nature, if fed alone for a long while digestive troubles are liable to occur. No protein supplement is necessary for a ration of shorts, though lime, in which shorts are low, should be supplied.

Rice polish is a by-product of the rice mills. It is excellent for swine and can be substituted even when costing one-fourth more per pound than corn. Owing to its heaviness it should be soaked 12 to 24 hours before feed-



Herd of Hogs, State Farms, Raiford.



ing, to avoid scouring. Hogs kept on rice meal for a long while tend to go off feed. Skim milk as a supplemental prevents this and also increases the gains.

Rice bran is another by-product of the rice mills. It can be substituted for corn when one-tenth cheaper per pound than corn. Being bulky and higher in protein, slower gains are made than with corn, though no protein supplement is needed. It cannot be fed through the summer, owing to rancidity and weevils.

Barley feed obtained in the manufacture of pearl barley and barley flour has about the same feeding value as a mixture of wheat bran and shorts and can be substituted for cornmeal when costing the same. No protein supplement is needed. It is rather bulky and generally used as a protein supplement when usual prices exist.

Pea meal can be substituted for corn when costing one-twelfth more than corn. It needs no protein supplement, but, owing to its close nature, should be fed with a bulkier feed. It is best used as a partial substitute. A fine quality of pork is produced by pea meal.

Broom corn waste or the tops of broom corn can be fed profitably to hogs and have about the same feeding value as millet.

Weed seeds from grain elevators can be substituted for two-thirds of the corn in a ration. They should be ground and cooked before feeding.

Cracker wastes can be substituted as one-half the grain ration. It can be fed dry or moist, but owing to its saltiness the hogs require more water. It is constipating and should be fed with oil meal or bran when in a dry lot, while green forage crops will counteract its costiveness during the grazing season.

Garbage is well utilized by swine. Care must be used in feeding to remove soap, washing powders, glass, etc., which may kill the pigs.

Blackstrap molasses when two-fifths cheaper per pound can be substituted as one-third of the corn in a ration. Its usual value commonly will prohibit such substitution.

There are many wastes and by-products from other industries, such as canning factories, which are of feeding value to swine. It should be remembered that, with bulky by-product feeds, such as distillery grains, brewers' grains and pea cannery refuse, the hog, owing to his digestive system, cannot utilize these as well as cattle and sheep.

When the prices of corn and nitrogenous by-product feeds, such as bran peanut meal, soy-bean meal, velvet bean meal, ~~linseed oil meal, tankage, fish meal~~, etc., are relatively close, a larger amount of these ~~concentrates~~ high in feeding value can be fed and partially substituted for corn. This will naturally increase the percentage of protein in the ration.

WHAT FLORIDA HAS DONE IN ROAD-BUILDING

From The Florida Grower

Every so-called "Tourist State" fully recognizes the value of good roads as a tremendous asset in these days of gasoline-driven vehicles, not alone for the convenience and pleasure of its own residents, but as an inducement to out-of-state auto owners, who may in many cases prefer to use their machines on tours to depending upon the railroads, and this will be more true than ever now that the transportation lines have increased their rates. We believe California has met the tourist's idea of good roads better than any other tourist State in the Union. With the southern part of the State interlaced from one end to the other with good county built roads, the people voted last summer three to one to bond the State for \$50,000,000 for additional roads, most of them to be made in the backward counties of the northern section, the people of southern California endorsing the project five to one. They realized that even with good roads in their own section they were in a manner isolated unless good connecting roads were built so that autoists might comfortably motor to that part of the State of which they are so justly proud. Maine is another tourist State that has bonded heavily for good roads, and all of the principal highways have been built and are maintained by the State.

Florida's roads have been built by counties, each county using its discretion as to type of highway. Some of them are very good indeed, some indifferent and some rather poor. Some counties have built no roads worthy of the name. As set forth in the figures below, for which we are indebted to the Tampa Tribune, the southern counties have built most of the improved highways. One can motor comfortably to all parts of South Florida once he is within the confines of this delightful section, but the trouble is in getting here from other States, the connecting roadways being in a rather deplorable condition with but little prospects of improvement unless concerted action is taken by the people of the State as a whole.

COUNTY BOND ISSUES FOR ROADS

County—	County Bonds	District Bonds	Totals
Alachua*	\$.....	\$ 675,000	\$.....
Baker*	225,000	.....	225,000
Bay	375,000	.....	375,000
Bradford .....	.....	550,000	550,000
Broward*	267,000	.....	267,000
Citrus .....	.....	.....	.....
Clay .....	.....	200,000	200,000
Calhoun .....	.....	70,000	70,000
Columbia	440,000	.....	440,000
Dade	1,298,000	515,000	1,813,000
DeSoto .....	.....	1,605,000	1,605,000
Duval	1,250,000	.....	1,250,000
Escambia .....	.....	.....	.....
Franklin	20,000	.....	20,000
Flagler	449,500	.....	449,500
Gadsden (brige).....	30,000	.....	30,000
Hamilton	400,000	.....	400,000
Hernando	250,000	.....	250,000
Hillsborough	2,021,000	198,000	2,219,000
Holmes .....	.....	201,000	201,000
Jackson	300,000	.....	300,000
Jefferson .....	.....	67,000	67,000
Lafayette .....	.....	250,000	250,000
Lake	500,000	.....	500,000
Lee .....	.....	466,500	466,500
Leon	200,000	.....	200,000
Levy .....	.....	100,000	100,000
Liberty .....	.....	.....	.....
Manatee* .....	.....	575,000	575,000
Madison .....	.....	.....	.....
Marion*	560,000	.....	560,000
Monroe	110,000	.....	110,000
Nassau*	180,000	.....	180,000
Okaloosa .....	.....	196,000	196,000
Okeechobee	300,000	.....	300,000
Orange	600,000	.....	600,000
Osceola* .....	.....	400,000	400,000
Palm Beach	1,126,000	485,000	1,611,000
Pasco	73,703	200,000	273,703
Pinellas	1,130,000	100,000	1,230,000
Polk	1,500,000	925,000	2,425,000

Putnam	100,000	553,000	653,000
Santa Rosa.....	.....	190,000	190,000
St. Johns.....	650,000	.....	650,000
St. Lucie.....	200,000	.....	200,000
Seminole	750,000	.....	750,000
Sumter	610,000	.....	610,000
Suwannee	700,000	.....	700,000
Taylor	600,000	.....	600,000
Volusia .....	.....	1,200,000	1,200,000
Wakulla .....	.....	15,000	15,000
Walton .....	.....	70,000	70,000
Washington .....	.....	.....	.....

Totals.....\$16,390,203 \$10,221,500 \$27,211,703

*Not official; no report received from Clerk of Circuit Court.

It shows that the eleven South Florida counties of Dade, DeSoto, Hillsborough, Palm Beach, Pinellas, Polk, Volusia, Lake, Manatee, Seminole and Orange—.202 per cent of the counties—are bonded for \$14,528,000.

It shows that the seven North Florida counties of Alachua, Bradford, Duval, Marion, Putnam, St. Johns and Suwannee—.126 per cent of the counties—are bonded for \$5,038,000.

It shows that the other thirty-seven counties of the State—.672 per cent of the counties—are bonded for \$7,545,703.

It shows that the entire State of Florida is already bonded for good roads to the amount of over \$27,211,700.

Looking further at the indisputable evidence of progress shown in the report, it is interesting to note that the seven North Florida counties of Alachua, Bradford, Duval, Marion, Putnam, St. Johns and Suwannee, the only counties north of the line marking off the peninsula part of the State are boded in excess of \$500,000. It is also interesting to note that Duval is carrying one-fourth of the total debt of these seven counties named; and it is further interesting to see that four of the northern tier of counties—Escambia, Liberty, Madison and Washington—have no road bond debt, while Franklin, Gadsden and Wakulla have each less than \$31,000.

Dividing the State along lines of strictly peninsular Florida and north Florida, we find the seventeen peninsular counties bonded for more than \$16,000,000 and the thirty-seven northern counties bonded for a little less than \$9,000,000.

BIBLIOGRAPHY OF LITERATURE ON FLORIDA

BY MOSES FOLSOM, *Secretary Market Bureau*

"Of making many books there is no end." When Solomon wrote this 2,700 years ago he referred to what is known to be rolls of papyrus, parchment or letter leather, with writing on one side and fastened at each end to rollers like those now used on wall maps. Ezekiel ii:9 tells of a hand being extended to him "and lo, a roll of a book was therein."

It was centuries later that the making of books as understood today was undertaken by monks, who laboriously wrote out page after page, beautifully illuminated, and then bound them together in heavy boards and chained them to desks and posts in the churches.

It was of books in chains in the English Cathedral of York that Alcuin (735-804) modestly wrote in his medieval age:

"There thou shalt find the volumes that contain
All the ancient fathers that remain;
There all the Latin writers make their home
With those that glorious Greece transferred to Rome—
The Hebrews draw from the celestial stream,
And Africa is bright with learning's beam."

Alcuin's name may not be a familiar one, but in the last twenty years no less than four books about him—the tutor of kings—have been printed in the United States of a man whose fame extends down through centuries.

It was seven hundred years after Alcuin's time that books were unchained by the invention of movable type, by Gutenberg, in the little German town of Mainz, almost contemporaneous with the equally momentous event of the discovery of America during the marvelous century just behind, as the saying of Solomon for the first time really applies.

While Florida has not been a large printer of books, yet few States have had more printed about it, as in the beginning of white man's knowledge of America, all of

the continent north of Mexico was known as Florida, and books about the wonderland thought in some cases to be the Indies, were printed in Spain, in France, in England, in Cuba, and even in Mexico. The catalogues of the Congressional Library in Washington contain over 1,800 Florida titles, available to visitors only in the magnificent reading room of the finest library building in the world.

Among the oldest of books on Florida was one issued in 1699 at Philadelphia, interesting in its contents as one can imagine by the following curious and extended title: "God's Protecting Providence Man's Surest Help and Defense, in the times of greatest difficulty and most imminent danger, evidenced in the remarkable deliverance of divers persons from the devouring waves of the sea, amongst which they suffered shipwreck, and also from the more cruelly devouring jaws of the inhuman cannibals of Florida. Faithfully related by one of the persons concerned therein."

Space will not permit us to call off the titles of the many books devoted to Florida, but students can find in the city libraries of the State some of the following, from which information can be had:

Bartram, William: *Travels Through North and South Carolina, Georgia, East and West Florida, and the Cherokee Country.* (First published in 1791.)

Brown, George M.: *Ponce de Leon Land and Florida*

War Record.

Bush, G. G.: *History of Education in Florida.*

Chapin, George W.: *Florida, 1513-1913, Past, Present and Future.* This is a very comprehensive and beautifully illustrated work in two large volumes, by a former well-known newspaper man, but now manager of the Chapin Photo Company of Jacksonville.

Commaack, L. H.: *What About Florida.*

Cory, Charles B.: *Hunting and Fishing in Florida.*

DeLand, Margaret L.: *Florida Days.*

Darby, William: *Memoir of the Geography and Natural and Civil History of East Florida (1821).*

Dimrock, A. W. and Julian: *Florida Enchantments.*

Dimrock, A. F.: *Book of the Tarpon.*

Fairbanks, George R.: (1) *History of Florida (1512-1842)*, and (2) *History and Antiquities of the City of St. Augustine.*

French, B. F.: Historical Collections of Louisiana and Florida.

Fuller, Herbert Bruce: The Purchase of Florida.

Giddings, J. R.: The Exiles of Florida.

Harcourt, Helen: Home Life in Florida.

Henshall, James A.: Camping and Cruising in Florida.

Holder, Charles Frederick: (1) Big Game Fishes of the United States; (2) Big Game at Sea, and (3) Along the Florida Reef.

Irving, Theodore: Conquest of Florida by DeSoto.

King, Grace: DeSoto and His Men in the Land of Florida.

Lanier, Sidney: Florida, Its Scenery, Climate and History.

Lowery, Woodbury: Spanish Settlements Within Present Limits of the United States.

Mann, F. A.: (1) Story of the Huguenots, and (2) The Story of Ponce de Leon.

Muir, John: A Thousand-Mile Walk to the Gulf.

Ober, F. A.: DeSoto and the Invasion of Florida.

Packard, Francis: (1) Pioneers of France in the New World, and (2) The Huguenots in Florida.

Preble, George H.: Diary of a Canoe Expedition Into the Everglades and Interior of Southern Florida (1842).

Reese, J. A.: Florida Flashlights.

Rhodes, Harrison, and Mary Wolfe Dumont: A Guide to Florida.

Sprague, John T.: The Florida War.

Stowe, Harriet Beecher: Palmetto Leaves.

Swift, F. R.: Florida Fancies.

Torrey, Bradford: A Florida Sketch-book.

Townsend, Captain: Wild Life in Florida.

Williams, J. L.: (1) The Territory of Florida, and (2) View of West Florida (1827).

Willoughby, Hugh L.: Across the Everglades.

Willson, Minnie Moore: The Seminoles of Florida.

Winter, Nevin O.: Florida, the Land of Enchantment.

The Publications of the State Department of Agriculture, the State Superintendent of Public Instruction, the State Geologist, the State Chemist, the State Experiment Station and other State institutions can be made of much use by persons engaged in a study of Florida and its resources. Many romances and novels have plots located in the State, volumes in public libraries and book stores.

LIST OF BULLETINS OF DEPARTMENT OF AGRICULTURE, STATE OF FLORIDA

Volume.	No.	Title of Bulletins.
24.	3.	Sugar Cane Growing in Florida.
24.	3.	Tomato Growing in Florida.
24.	3.	Irish Potato Growing in Florida.
24.	3.	Celery Growing in Florida.
24.	3.	Lettuce Growing in Florida.
24.	3.	Pecan Growing in Florida.
24.	4.	Sorghum for Silage and Forage in Florida.
24.	4.	Dwarf Essex Rape for Winter Forage in Florida.
24.	4.	Japanese Cane Growing in Florida.
24.	4.	Native and Grade Cattle Breeding in Florida.
24.	4.	The Home Dairy in Florida.
24.	4.	Live Stock Growing in Florida.
24.	4.	Wood Using Industries of Florida.
24.	4.	Quarterly Bulletin, October, 1914.
25.	2.	Natal Grass.
25.	2.	White-fly Control.
25.	2.	Seasons and Dates for Planting.
25.	2.	Strawberries. (Fragaria.)
25.	2.	Cattle Tick Eradication.
25.	3.	Cotton.
25.	3.	Corn.
25.	3.	Uses and Purposes of Ground Limestone.
25.	3.	Quarterly Bulletin, July, 1915.
25.	4.	Cow Peas for Hay and Soil Building.
25.	4.	The Sweet Potato Crop.
25.	4.	Fig Growing in Florida.
25.	4.	What Farmers' Co-operative Work Stands for.
26.	2.	The Cultivation of Melons (also Cucumbers).
26.	2.	Considering the Cattle Tick. Some Sentimental as Well as Practical Phases of the Subject.
26.	2.	An Inventory of Florida's Forests, and the Outlook for the Future.
26.	2.	Avocado Production, Avocado Cultivation.

- 26. 3. Canning and Preserving of Vegetables and Fruit.
- 26. 3. Farm Loan Act.
- 26. 4. Velvet Bean Growing in Florida.
- 26. 4. Curing of Meat.
- 26. 4. Proceedings of Florida Drainage Association.
- 26. 4. Quarterly Bulletin, October, 1916.
- 27. 1. Quarterly Bulletin, January, 1917, Chemical.
- 27. 2. Why Florida Should Lead the Eastern United States in the Growing of Live Stock.
- 27. 2. Sheep Growing on Farm and Range in Florida.
- 27. 3. Peanut Growing in Florida.
- 27. 3. Beans, Eggplants, Peppers, Okra.
- 27. 4. The Citrus Grove, Its Location and Cultivation.
- 27. 4. Growing Onions in Florida.
- 27. 4. Wheat in Florida. Growing Rye in Florida.
- 28. 2. Growing Broom Corn in Florida.
- 28. 2. Milch Goats.
- 28. 2. Rice Growing in Florida.
- 28. 2. Home Cured Beef.
- 28. 2. Value of Dairy Cattle, etc. Weights of Dairy Products, Weights of Fat Cattle.
- 28. 3. Quarterly Bulletin, July, 1918.
- 28. 4. Angora Goats and Sheep in Florida. Why Not Both?
- 28. 4. Quarterly Bulletin, October, 1918.
- 28. 4. Growing Cassava in Florida.
- 29. 1. Quarterly Bulletin, January, 1919. Chemical Division.
- 29. 2. April Quarterly Bulletin.
- 29. 3. July Quarterly Bulletin.
- 29. 4. October Quarterly Bulletin.
- 30. 1. Quarterly Bulletin, January, 1920. Chemical Division.
- 30. 2. April Quarterly Bulletin.
- 30. 3. July Quarterly Bulletin.
- 30. 4. October Quarterly Bulletin.
- 30. 2. Indian Runner Ducks.

- | | | |
|-----|----|---|
| 30. | 4. | Productivity of the Soil of Florida and Various Other Parts of the United States. |
| 30. | 4. | The Everglades. |
| 30. | 4. | Commercial Agriculture. |
| 31. | 1. | Soils and Fertilizers. |

LIST OF BULLETINS, REPORTS AND LEAFLETS

Thirteenth Biennial Report, Part 2, Manufacturing, 1913-14.

Fourteenth Biennial Report, Part 1, Introductory, 1915-16.

Fourteenth Biennial Report, Part 2, Crop Estimates and Live Stock, 1915-16.

Fourteenth Biennial Report, Part 3, Manufacturing, 1915-16.

Fourteenth Census of the State of Florida, 1915.

Fifteenth Biennial Report, Parts 1 and 2, 1917-18.

Sixteenth Biennial Report, Parts 1, 2 and 3, 1919-20.

Instructions With Reference to Securing State Lands.

Fourteenth Biennial Report of State Land Division, 1916.

Statistics on Mineral Production in Florida During 1917.

Raw Phosphate, "Fleats" Ground, Hard Rock Phosphate.

Acid Phosphate vs. Raw Ground Phosphate.

Analysis of Florida Muck Soils.

General Drainage Laws of Florida.

Single copies of these can be had on application, while they last, with the Department of Agriculture.

CLIMATOLOGICAL DATA, FLORIDA SECTION

FLORIDA SECTION

Alexander J. Mitchell, Meteorologist

VOL. XXIII. JACKSONVILLE, FLORIDA, ANNUAL, 1919. No. 13

GENERAL SUMMARY

From a seasonal viewpoint, the winter of 1918-19 was moderately warm and wet. The spring of 1919 was pleasant, but averaged much wetter than the normal. The rest of the year was decidedly warm, monthly excesses of 6.7° and 4.0° occurring in October and November, respectively. Except November, which was disagreeably wet, the weather during the last of summer and throughout autumn was warm and dry—ideal conditions for harvesting purposes. The mean annual temperature, 71.6° , stamps the year as the warmest of record, except 1911, which averaged 72.3° . The average rainfall, 57.35 inches, exceeded that of 1918 by more than 7 inches, and it was the fourth wettest year since 1892. January, with a mean temperature of 57.8° , was the coldest month, and during which the annual minimum, 14.0° , occurred. August gave a mean of 81.7° , with the annual maximum of 101° . Temperatures of 100° occurred during the three summer months.

The cotton crop was the shortest of record. Corn, cane, peanuts, sweet and Irish potatoes, strawberries, and truck, generally, were mostly satisfactory. The citrus crop was excellent.

The hurricane of September the 9-10 damaged property to the value of several million dollars at Key West, and caused a shocking loss of life on ships that foundered during the storm. It was probably the severest storm of authentic record in Florida.

THE WEATHER BY MONTHS

JANUARY.—January was cooler and drier than the normal. Damaging frosts occurred during the first and second decades; and a second cold period occurred during the third decade. The temperature was in the 30's at Miami on the 5th, and on the 6th it was near freezing in the low lands to the west of that station. The rainfall was mostly insufficient, as a rule, but it was locally heavy over small areas. Snow flurries occurred at several stations in the extreme north on the 3d and 4th. Much plowing was done for corn, cotton and other general crops. Truck did very well, but the weather was too warm during a portion of the third decade.

FEBRUARY.—The conditions were the reverse of those during January, the temperature being moderate with excessive moisture. Much cloudiness and excessive rains damaged the shipping qualities of citrus fruits, and delayed farm work. A small acreage was seeded to cotton, and some corn was above ground. Strawberries were shipped in moderate quantities and vegetables were plentiful from the lower peninsula counties. Frost, more or less damaging, occurred in all divisions on the 10th, 11th and 17th, except the southern where the damage was local.

MARCH.—The rains of the last of February continued; they were excessive and caused great damage to truck in the southern division on the 14th and 15th, the monetary loss approximating several million dollars. Fort Lauderdale reported 24-hour amounts of 5.75 and 5.70 inches on the 14th and 15th, and Miami and Davie, 8.48 and 6.20 inches, respectively, on the 14th. A local storm of tornadic character did considerable damage in Escambia County on the 5th. Farm work was backward, but the planting of corn and cotton was pushed wherever the soil was in condition.

APRIL.—The rainfall was mostly light, except on 3 or 4 days when heavy rains damaged crops in the southern division. It was heavy, also, at Pensacola and vicinity on the 10-11, and from the 15th to 17th, flooding low lands and delaying farm work. The planting of corn and cotton continued; some corn was worked for the first time. The oat crop was fair to good. The growth

of melons, cane, peanuts, and truck was slow, owing to frost during the fore part of the month. Citrus groves were promising.

MAY.—The outstanding features were the low barometric pressure, frequent and widespread rainfall. Only one May since 1892 was wetter. The heavy rains of the last week damaged most crops on low lands, especially cotton, but corn, cane, peanuts, melons, and tobacco were generally fair to good. The citrus crop was excellent—trees vigorous and well fruited. Most of the oat crop was harvested; the yield was fair to good. Fields were grassy at the close of the month. The cotton crop was very discouraging.

JUNE.—The excess in rain for the State was but little more than one-half inch. It was, however, the wettest June of record for Jacksonville, where the total was 13.79 inches. There were 15.48 and 15.02 inches at Switzerland and Middleburg, respectively. Wet soil and foul fields were general. Cotton, especially, was unfavorably affected; many fields were abandoned. Corn was mostly good. Cane, peanuts, and citrus fruits advanced well. The rainstorm of the 29-30th over much of northeastern Florida flooded low lands; crops were washed up, and brick highways were damaged. Street car service was discontinued for a period in Jacksonville, and traffic was demoralized from Fernandina southward. The damage in Jacksonville was fully \$25,000.

JULY.—The rains of June continued into July, being the third consecutive month with excessive precipitation. The bulk of the month's rain fell, however, during the first four days, and from the 15th to 28th, inclusive. The month was too wet for cotton, corn on low lands, haying, and the curing of tobacco; also, for melons, tomatoes and other truck. Cane and citrus fruits, however, did well. Much cotton land was abandoned as the result of unfavorable weather and the presence of the weevil.

AUGUST.—Temperatures averaged near the normal. The rainfall was slightly deficient. Frequent showers favored weevil activity. Corn was good on uplands, but poor in low lands. Cane, sweet potatoes, peanuts, and tobacco, made good progress. Citrus fruits were good to excellent. The first bale of cotton was harvested during the

month. A wind storm on the 22d damaged property to the extent of \$6,000 near Erin, Pasco County. And lightning destroyed a barn at Titusville on the 2d, valued at \$6,000.

SEPTEMBER.—Moderate temperature and decidedly dry weather featured September. The factor of greatest moment was the hurricane of the 9-10th, which passed westward over the Gulf, doing damage at Key West approximating \$2,000,000. * (See September report for details). The dry weather was ideal for harvesting corn, cotton, and peanuts. The cotton crop was the shortest of record—due to the weevil and unfavorable weather. Cane, sweet potatoes, velvet beans, and citrus fruits did well. Strawberry plants were set, but truck was backward, owing to dry weather.

OCTOBER.—It was the warmest October of record, surpassing October of 1918 by nearly 3°. Dry weather continued, except in the northwest. The planting of coats and rye was delayed, and the germination and growth were poor; much hay was saved. Grape fruit dropped badly in some localities. The last of the corn and cotton crops was harvested. Dry weather delayed trucking.

NOVEMBER.—Warm weather persisted during most of the month, the mean temperature being about 4° above the normal. Rain, too, averaged more than usual. The absence of frost was favorable for tomatoes, beans, egg plants, and Irish potatoes. Much syrup was made, although most of the cane was standing at the close of the month.

DECEMBER.—The month averaged warm, but sharp cold spells swept most of the section during the second and third decades. Rain was mostly insufficient, especially in the southern division. Oats and rye made fair progress. Tender truck suffered from frost to some extent, but celery, lettuce, cabbages, and citrus fruits were benefited by lower temperatures. Ranges were in fair condition at the beginning of the month, but were much depleted at its close.

NOTE—*Obtained by addressing A. J. Mitchell, Weather Bureau, Jacksonville, Fla.

COMPARATIVE ANNUAL DATA FOR FLORIDA.

YEAR	Temperature				Precipitation	
	Mean	Departure from the Normal	Highest	Lowest	Average	Departure from the Normal
1892	70.4	- 0.2	101	22	47.99	- 4.42
1893	71.0	+ 0.4	104	19	53.01	+ 0.60
1894	71.2	+ 0.6	101	12	52.51	+ 0.10
1895	69.9	- 0.7	100	11	45.50	- 6.91
1896	71.0	+ 0.4	103	20	49.62	- 2.79
1897	71.2	+ 0.6	104	17	56.69	+ 4.28
1898	70.5	- 0.1	102	17	48.36	- 4.05
1899	71.0	+ 0.4	104	- 2	53.93	+ 1.52
1900	70.7	+ 0.1	104	13	61.19	+ 8.78
1901	68.8	- 1.8	107	12	58.47	+ 6.06
1902	70.8	+ 0.2	105	15	51.24	- 1.17
1903	69.8	- 0.8	105	17	55.79	+ 3.38
1904	69.9	- 0.7	102	20	48.15	- 4.26
1905	70.5	- 0.1	103	10	61.43	+ 9.02
1906	70.9	+ 0.3	101	14	53.76	+ 1.35
1907	71.5	+ 0.9	102	21	49.15	- 3.26
1908	71.2	+ 0.6	103	20	48.54	- 3.87
1909	71.1	+ 0.5	103	16	49.52	- 2.89
1910	69.2	- 1.4	102	19	50.88	- 1.53
1911	72.3	+ 1.7	104	15	47.40	- 5.01
1912	71.1	+ 0.6	104	21	64.88	+11.61
1913	71.2	+ 0.7	104	23	48.02	- 6.20
1914	70.3	- 0.1	107	10	49.08	- 4.62
1915	70.4	- 0.1	105	23	56.30	+ 1.23
1916	71.1	+ 0.3	102	21	47.10	- 6.26
1917	70.3	- 0.7	102	13	41.36	-12.72
1918	71.3	+ 0.5	106	11	50.09	- 2.10
1919	71.6	+ 0.9	101	14	57.35	+ 5.08

PRESSURE, WIND, HUMIDITY AND SUNSHINE DATA.

STATIONS	Atmospheric Pressure (Reduced to Sea Level)			Wind				Relative Humidity, Mean an.			Percentage of Sunshine
	Mean	Highest	Lowest	Average Hourly Velocity	Maximum Velocity	Direction	Date	8 A. M.	Noon	8 P. M.	
Jacksonville	30.06	30.53	29.64	11.9	54	sw.	May 20	83	63	77	59
Key West	30.01	30.37	28.83	10.1	110	e.	Sept. 10	77	69	77	66
Miami	30.04	30.39	29.67	8.6	46	se.	Sept. 9	78	67	75	63
Pensacola	30.05	30.59	29.49	12.8	62	sw.	May 26	84	73	76	63
Tampa	30.05	30.50	29.68	6.5	36	ne.	Jan. 12	81	58	72	63

KILLING FROSTS, 1919.

STATIONS	Last in Spring	First in Autumn
Northern Division.		
Archer	*	*
Bristol	April 2	*
Carrabelle	Feb. 17	Dec. 15
Cedar Keys	Jan. 6	None
Crescent City	Feb. 11	Dec. 18
Federal Point	Jan. 6	None
Fenholloway	April 2	Dec. 15
Fernandina	Feb. 10	None
Gainesville	April 2	Dec. 17
Hilliard	Feb. 17	Dec. 16
Jacksonville	Feb. 17	Dec. 16
Jasper	Feb. 16	Dec. 15
Johnstown	Feb. 17	*
Lake City	April 2	Dec. 15
Live Oak	*	*
Macclenny	April 2	*
Madison	April 2	Dec. 16
Middleburg	April 2	Dec. 16
Monticello	*	Dec. 15
Mount Pleasant	Feb. 17	*
Old Town	April 2	Dec. 16
Quincy	Feb. 17	Dec. 15
St. Augustine	Jan. 12	None
Satsuma Heights	Feb. 10	Dec. 16
Switzerland	Feb. 11	None
Tallahassee	Feb. 17	Dec. 15
Central Division.		
Bartow	Feb. 11	None
Brooksville	April 2	Dec. 16
Clermont	Jan. 6	None
DeLand	April 2	Dec. 18
Eustis	Feb. 11	None
Fellsmere	Jan. 6	None
Fort Meade	Feb. 11	None
Fort Pierce	None	None
Inverness	Feb. 11	None
Kissimmee	None	None
Lakeland	Jan. 6	None
Lucerne Park	Jan. 6	*
Malabar	None	None
McDonald	Feb. 11	Dec. 18
Merritts Island	None	None
New Smyrna	Jan. 6	None
Ocala	April 3	Dec. 18

*Record incomplete.

KILLING FROSTS, 1919—(Continued).

STATIONS	Last in Spring	First in Autumn
Okeechobee	April 2	*
Orange City	Feb. 17	Dec. 18
Orlando	Jan. 6	None
Oxford	*	*
Pinellas Park	Jan. 6	None
Plant City	†Feb. 11	*
Rockwell	*	*
St. Cloud	*	None
St. Leo	Jan. 6	Dec. 16
St. Petersburg	None	None
Sanford	Feb. 11	None
Tampa	Jan. 6	None
Tarpon Springs	Feb. 17	None
Titusville	Jan. 6	None
Southern Division.		
Arcadia	*	None
Avon Park	None	None
Boca Grande	None	None
Bradentown	Feb. 11	None
Davie	Feb. 17	Dec. 30
Fort Lauderdale	None	None
Fort Myers	None	None
Griffin	None	Dec. 30
Homestead	None	None
Hypoluxo	Feb. 12	Dec. 30
Key West	None	None
Long Key	None	None
Miami (1)	None	None
Miami (2)	None	None
Moore Haven	Feb. 17	Dec. 30
Punta Gorda	*	None
Ritta	None	None
Sand Key	*	None
Western Division.		
Apalachicola	Feb. 11	Dec. 15
Bonifay	Feb. 17	Dec. 15
DeFuniak Springs	*	Dec. 15
Garniers (near)	April 2	Dec. 15
Marianna	Feb. 17	Dec. 15
Molino	*	*
Pensacola	Feb. 10	Dec. 15
St. Andrews	Feb. 17	Dec. 15
Wausau	April 3	Dec. 15

†Data incomplete, but this date probably correct.

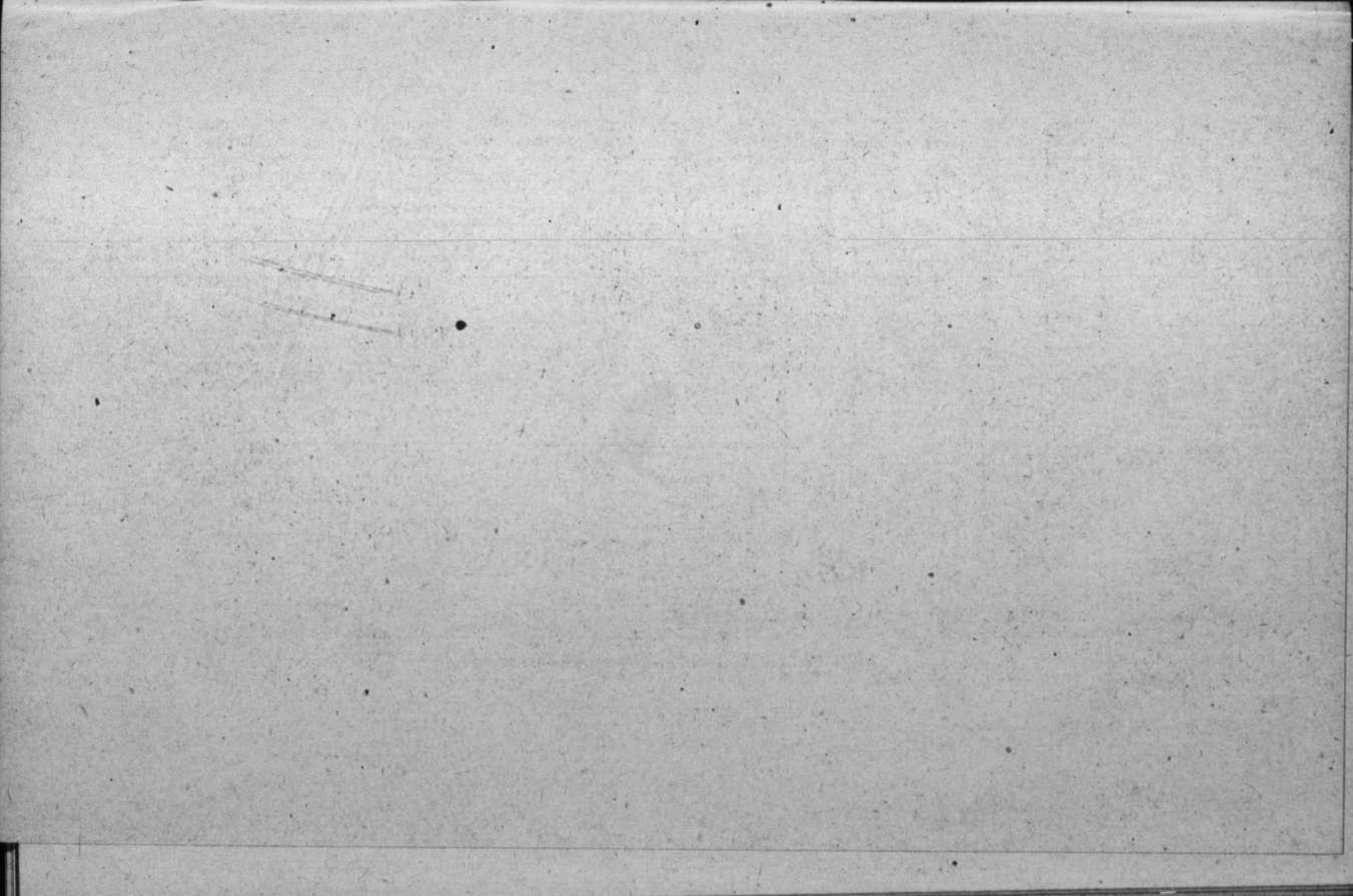
MONTHLY SUMMARY, 1919.

Month	Temperature				Precipitation		Average Number of Days				Wind
	State Average	Departure from Normal	Highest	Lowest	State Average	Departure from Normal	Rainy, 0.01 Inch or More	Clear.	Partly Cloudy	Cloudy	Prevailing Direction
January	57.8	- 0.8	88	14	2.32	-0.56	6	14	9	8	nw.
February	60.2	+ 0.2	88	24	4.91	+1.66	10	10	8	10	sw.
March	66.9	+ 1.2	90	34	5.41	+2.20	8	17	8	6	ne.
April	68.8	- 1.0	94	30	2.33	-0.15	4	20	7	3	e.
May	75.6	- 0.4	98	46	6.45	+2.62	12	12	12	7	se.
June	79.0	- 0.9	100	56	7.16	+0.69	14	10	12	8	e.
July	80.9	- 0.5	100	61	8.77	+1.81	17	11	13	7	se.
August	81.7	+ 0.4	101	60	6.67	-0.36	14	12	14	5	sw.
September	79.5	+ 0.2	99	50	4.83	-2.16	11	14	12	4	ne.
October	79.2	+ 6.7	98	58	2.42	-1.94	7	18	10	3	e.
November	69.0	+ 4.0	92	34	3.35	+1.43	7	14	9	7	ne.
December	60.7	+ 1.2	90	24	2.73	-0.16	5	18	7	6	ne.
Year	71.6	+ 0.9	101	14	57.35	+5.08	115	170	121	74	ne.

MAXIMUM RAINFALL AT REGULAR STATIONS.

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
5 Minutes .....	.20*	.28*	.51†	.46*	.52†	.48x	.47*	.47†	.54z	.41†	.35x	.32†	.54
10 Minutes .....	.29*	.54*	.96†	.84*	.94†	.82x	.74z	.72†	1.04z	.59†	.52x	.43†	1.04
15 Minutes .....	.41*	.77*	1.34†	1.24*	1.24†	1.02x	1.03z	.93*	1.44z	.63†	.65x	.61†	1.44
30 Minutes .....	.74*	1.06*	2.26†	2.10*	1.74†	1.56z	1.36z	1.64*	1.98z	.73†	.91x	.85†	2.26
1 Hour	1.04*	1.16*	2.82†	3.10*	1.98†	2.35z	1.44z	2.91*	2.02z	1.06†	1.16x	1.10†	3.10
2 Hours	1.41*	1.77*	3.12†	4.38*	2.44†	2.74z	1.61*	4.71*	2.04z	1.13†	2.06x	1.12†	4.71

† Jacksonville; x Key West; † Miami; * Pensacola; z Tampa.



CLIMATOLOGICAL DATA FOR THE YEAR 1919.

STATIONS.	COUNTIES.	Elevation, feet.	TEMPERATURE, IN DEGREES FAHRENHEIT.					
			Length of record years.	Annual mean.	Highest.	Date.	Lowest.	Date
Northern Division.								
Archer	Alachua	92	34	.....	96	July 13†	.....	.....
Bristol	Liberty .....	.....	9	.....	.....	.....	.....	.....
Camp Johnston	Duval .....	.....	1	.....	.....	.....	24	Jan. 4
Carrabelle	Franklin	10	21	.....	98	Aug. 2	23	Jan. 5
Cedar Keys	Levy	20	31	72.2	95	Sept. 9	25	Jan. 4
Crescent City	Putnam	45	21	70.8	97	July 7	29	Jan. 4†
Federal Point	do	10	28	71.4	98	July 7	28	Jan. 4
Fenholloway	Taylor	75	13	.....	.....	.....	20	Jan. 5†
Fernandina	Nassau	15	27	69.4	97	Aug. 2	23	Jan. 4
Gainesville	Alachua	176	24	70.1	96	July 13	24	Jan. 4†
Hilliard	Nassau	69	11	69.3	97	July 6†	21	Jan. 4
Jacksonville	Duval	222	49	69.8	94	Aug. 21	23	Jan. 4
Jacksonville (2).....	do .....	.....	3	.....	.....	.....	25	Jan. 4
Johnstown	Hamilton	152	17	.....	.....	.....	22	Jan. 4†
Jasper	Bradford	125	21	.....	95	June 11†	23	Jan. 4
Lake City	Columbia	210	36	69.7	99	June 23†	20	Jan. 4

Live Oak	Suwanee	109	18	.....	.....	.....	21	Jan. 4
Macclenny	Baker	125	24	.....	.....	.....	22	Jan. 6
Madison	Madison	143	20	69.5	96	Oct. 13†	19	Jan. 4
Melrose	Alachua	163	.....	.....	.....	.....	.....	.....
Middleburg	Clay	39	19	69.6	98	July 13	22	Jan. 6
Monticello	Jefferson	207	16	.....	95	Aug. 29†	.....	.....
Mount Pleasant	Gadsden	306	14	68.3	98	July 7	17	Jan. 4†
Old Town	LaFayette .....	.....	2	70.1	96	June 7†	21	Jan. 6
Quincy	Gadsden .....	.....	5	.....	98	July 7	17	Jan. 5
St. Augustine	St. Johns	10	68	70.6	97	Aug. 2†	28	Jan. 4
Satsuma Heights	Putnam	98	12	71.7	99	July 7	26	Jan. 5
Switzerland	St. Johns	14	27	.....	95	Aug. 6	26	Jan. 5†
Tallahassee	Leon	192	33	68.6	95	Aug. 2†	19	Jan. 4
Central Division.								
Bartow	Polk	115	33	72.5	97	Aug. 6†	28	Jan. 6
Brooksville	Hernando .....	.....	28	70.7	95	July 14†	25	Jan. 6
Clermont	Lake	105	27	73.5	97	Aug. 6†	31	Jan. 6
DeLand	Volusia	27	23	72.1	100	July 8	26	Jan. 6
Eustis	Lake	56	29	72.5	101	Aug. 6	27	Jan. 6
Fellsemere	St. Lucie	25	6	72.0	94	July 7†	32	Jan. 6
Fort Meade	Polk	125	31	72.6	97	May 24	27	Jan. 6
Fort Pierce	St. Lucie	10	19	74.6	98	Aug. 3	34	Jan. 6
Inverness	Citrus	43	21	71.5	94	July 8†	27	Jan. 6
Isleworth	Orange .....	.....	.....	.....	.....	.....	.....	.....
Kissimmee	Osceola	65	28	.....	.....	.....	33	Jan. 4†
Lakeland	Polk	227	5	72.4	93	Aug. 8†	32	Jan. 4†
Lucerne Park	do .....	.....	8	.....	.....	.....	31	Jan. 4†
Lynne (near)	Marion .....	.....	.....	.....	.....	.....	.....	.....
Malabar	Brevard	28	28	.....	.....	.....	33	Jan. 6
McDonald	Orange	175	23	71.8	97	Aug. 6†	27	Jan. 6

CLIMATOLOGICAL DATA FOR THE YEAR 1919—Continued.

STATIONS.	COUNTIES.	Elevation, feet.	TEMPERATURE, IN DEGREES FAHRENHEIT.					
			Length of record, years.	Annual mean.	Highest.	Date.	Lowest.	Date.
Merritts Island ...	Brevard	20	37	72.5	94	Aug. 2†	37	Jan. 6
New Smyrna	Volusia	14	35	.....	99	Aug. 2	31	Jan. 5†
Ocala	Marion	98	28	69.8	98	July 14	25	Jan. 4†
Okeechobee	Okeechobee .....	.....	2	.....	96	July 31†	30	Jan. 6
Orange City	Volusia	39	26	.....	99	Aug. 6	24	Feb. 11
Orlando	Orange	111	28	73.0	98	Aug. 5†	28	Jan. 6
Oxford	Sumter .....	.....	.....	.....	.....	.....	.....	.....
Pinellas Park	Pinellas	20	8	72.5	94	July 14	33	Jan. 6†
Plant City	Hillsboro	121	26	.....	.....	.....	28	Jan. 6
Rockwell	Marion	54	17	.....	.....	.....	27	Jan. 4†.
St. Cloud	Osceola .....	.....	6	.....	96	July 16†	.....	.....
St. Leo	Pasco	190	25	70.8	93	July 14	29	Jan. 5†
St. Petersburg	Pinellas .....	.....	5	73.8	94	July 15†	35	Jan. 5†
Sanford	Seminole	25	12	71.5	97	Aug. 6	30	Jan. 4†
Tampa	Hillsboro	104	30	73.1	95	Aug. 21	33	Jan. 6
Tarpon Springs ...	Pinellas	20	35	72.7	97	Aug. 22	28	Jan. 6
Titusville	Brevard	16	24	72.2	98	Aug. 1	31	Jan. 6

Southern Division.								
Arcadia	DeSoto	61	18		98	July 8†		
Avon Park	do	150	21	73.0	96	July 7†	34	Jan. 6
Boca Grande	Lee	11	4		95	July 14†	39	Jan. 6
Bradentown	Manatee	22	36	72.4	97	Aug. 21†	31	Feb. 11
Davie	Broward	10	7		94	Aug. 4	29	Dec. 30
Fort Lauderdale	do	10	7	75.1	95	Aug. 2	36	Feb. 12†
Fort Myers	Lee	12	48	74.1	97	May 24	36	Jan. 5
Griffin	Broward	12	7	72.9	94	Aug. 1	32	Dec. 30
Homestead	Dade	13	10	74.2	96	July 12†	35	Feb. 12†
Hypoluxo	Palm Beach	9	25	74.6	96	Sept. 26	33	Feb. 12†
Key West	Monroe	15	49	77.3	92	Aug. 28	52	Jan. 6
Lock No. 1	Broward							
Long Key	Monroe	9	4	77.5	95	Aug. 26	47	Jan. 6
Miami (1)	Dade	83	18	74.8	92	Aug. 2	37	Jan. 5
Miami (2)	do	10	9	75.4	95	Sept. 26	36	Jan. 5†
Moore Haven	DeSoto		2		95	Aug. 6†		
Punta Gorda	do	7	5					
Ritta	Palm Beach	18	7		96	June 30†	36	Dec. 30
Sand Key	Monroe	42	14					
Western Division.								
Apalachicola	Franklin	24	16	69.4	95	Aug. 2†	22	Jan. 4
Bonifay	Calhoun	111	14		97	Sept. 18	17	Jan. 4
DeFuniak Springs	Holmes	193	22		98	Aug. 7		
Garniers (near)	Walton	22	7	67.7	99	July 7	14	Jan. 4
Marianna	Okaloosa	120	18	68.4	99	Aug. 8†	18	Jan. 4
Molino	Jackson	49	16				16	Jan. 4
Pensacola	Escambia	151	40	67.9	93	July 7	17	Jan. 4
St. Andrews	Bay	14	23					
Wausau	Washington	250	21	68.3	98	Sept. 11†	18	Jan. 4†

†On other dates also.

CLIMATOLOGICAL DATA FOR THE YEAR 1919.

STATIONS.	COUNTIES.	PRECIPITATION, IN INCHES.								SKY.			
		Length of record, years.	Total for year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.	Number of rainy days.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.
Northern Division.													
Archer	Alachua ..	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bristol	Liberty	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Camp Johnston ..	Duval	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carrabelle	Franklin ..	21	46.59	8.08	Aug.	1.00	Oct.	0	78	.....	.....	.....	.....
Cedar Keys	Levy	33	56.91	13.63	Aug.	1.10	April	0	68	.....	.....	.....	nw.
Crescent City	Putnam ..	21	63.34	12.85	July	1.41	Jan.	0	144	102	155	108	se.
Federal Point	do	28	74.41	11.93	June	1.74	Jan.	0	142	167	144	54	ne.
Fonholloway	Taylor	13	.....	.....	.....	.....	.....	0	.....	.....	.....	.....	.....
	Nassau	27	57.95	12.19	June	0.97	April	0	104	196	45	124	se.
Gainesville	Alachua ..	31	54.31	8.12	Aug.	1.36	April	0	132	150	153	62	ne.
Hilliard	Nassau	11	64.23	13.58	July	1.05	Nov.	0	114	206	125	34	.....
Jacksonville	Duval	49	57.50	13.79	June	1.06	Nov.	0	126	148	125	92	ne.
Jacksonville (2) ..	do	3	.....	.....	.....	.....	.....	0	.....	.....	.....	.....	.....
Jasper	Hamilton ..	17	.....	.....	.....	.....	.....	0	.....	.....	.....	.....	.....
Johnstown	Bradford ..	22	.....	.....	.....	.....	.....	0	.....	.....	.....	.....	.....
Lake City	Columbia ..	36	57.94	9.98	July	1.83	Oct.	0	121	151	56	158	ne.

Live Oak	Suwanee	22																	
Macclenny	Baker	24								0									
Madison	Madison	20	50.63	7.67	Feb.	1.78	Oct.	T.	124									sw.	
Melrose	Alachua	6	51.80	7.98	June	1.27	Oct.	0	109	186	126	53							
Middleburg	Clay	19	67.29	15.02	June	1.22	April	0	86										
Monticello	Jefferson	16																	
Mount Pleasant	Gadsden	14	60.34	9.52	Feb.	0.43	Sept.	0	111	181	106	78					nw.		
Old Town	LaFayette	2	64.47	10.69	Aug.	2.14	Dec.	0	111	183	113	69					e.		
Quincy	Gadsden	5	63.67	10.33	Feb.	1.02	Sept.	T.	124	174	85	106					s.		
St. Augustine	St. Johns	51	59.79	10.26	Sept.	1.66	April	0	148	186	118	61					ne.		
Satsuma Heights	Putnam	12	63.95	9.55	May	1.52	Oct.	0	104								ne.		
Switzerland	St. Johns	28	70.69	15.48	June	1.19	Nov.	0	134										
Tallahassee	Leon	35	55.14	10.23	July	0.57	Oct.	0	117								n.		
Central Division.																			
Bartow	Polk	33	51.59	10.16	July	0.34	April	0	133	147	194	24					e.		
Brooksville	Hernando	28	52.11	10.72	June	0.74	Oct.	0	160	171	129	65					w.		
Clermont	Lake	27	56.08	10.62	Aug.	0.93	Oct.	0	124	194	75	96					w.		
DeLand	Volusia	17	51.05	9.65	May	1.27	Oct.	0	134								s.		
Eustis	Lake	29	53.53	8.83	June	1.02	Oct.	0	119	241	81	43					ne.		
Fellsmere	St. Lucie	8	53.26	10.13	Sept.	0.61	April	0	148	194	111	60					se.		
Fort Meade	Polk	37	62.22	12.02	July	0.66	Oct.	0	133	133	181	51					ne.		
Fort Pierce	St. Lucie	25	49.01	9.43	July	0.60	Oct.	0	126								se.		
Inverness	Citrus	21						0									sw.		
Isleworth	Orange	4	55.18	8.55	May	0.58	Oct.	0	97										
Kissimmee	Osceola	28						0											
Lakeland	Polk	5	63.79	10.16	July	0.94	April	0	89	261	69	35					ne.		
Lucerne Park	do	8						0									ne.		
Lynne (near)	Marion	6	46.91	7.33	July	0.85	Oct.	0	127								ne.		
Malabar	Brevard	28						0									se.		

CLIMATOLOGICAL DATA FOR THE YEAR 1919—Continued.

STATIONS.	COUNTIES.	PRECIPITATION, IN INCHES.							Number of rainy days.	SKY.				Prevailing wind direction.
		Length of record, years.	Total for year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.		Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
McDonald	Orange	17	48.13	6.64	May	0.92	April	0	124	.....	.....	.....		ne.
Merritts Island	Brevard ..	41	57.31	11.84	Aug.	0.27	April	0	127	203	111	51		n.
New Smyrna	Volusia	36	.....	.....	.....	.....	.....	0	.....	.....	.....	.....		se.
Ocala	Marion	28	54.81	10.74	May	0.75	April	0	128	.....	.....	.....		.....
Okeechobee	Okeechobee ..	2	.....	.....	.....	.....	.....	0	.....	.....	.....	.....		.....
Orange City	Volusia	29	43.67	8.35	May	0.61	Oct.	0	124	127	187	51		ne.
Orlando	Orange	28	57.24	11.49	July	0.80	Oct.	0	143	.....	.....	.....		s.
Oxford	Sumter .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....
Pinellas Park	Pinellas	8	53.18	16.87	July	0.64	April	0	114	248	77	40		nw.
Plant City	Hillsboro ..	26	.....	.....	.....	.....	.....	0	.....	.....	.....	.....		.....
Rockwell	Marion	19	.....	.....	.....	.....	.....	0	.....	.....	.....	.....		.....
St. Cloud	Osceola	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		se.
St. Leo	Pasco	25	63.38	12.16	June	0.63	April	0	138	172	130	63		e.
St. Petersburg	Pinellas	5	55.07	14.97	July	1.41	April	0	129	170	119	76		ne.
Sanford	Seminole	12	57.92	9.40	July	1.55	Oct.	0	130	145	101	119		se.
Tampa	Hillsboro ..	30	53.68	11.80	July	0.41	April	0	122	81	159	125		ne.
Tarpon Springs	Pinellas	28	49.77	15.02	July	1.04	Oct.	0	100	187	109	69		w.
Titusville	Brevard ..	24	64.36	15.57	Aug.	0.63	April	0	141	118	155	92		se.

Southern Division.																	
Arcadia	DeSoto	18							0								e.
Avon Park	do	21	59.69	18.71	July	0.85	Oct.	0	125	130	148	87					e.
Boca Grande	Lee	4				1.63	Oct.	0									
Bradentown	Manatee	36	57.80	14.02	July	1.21	Jan.	0	103	203	103	59					nw.
Davie	Broward ...	7	64.47	8.52	April	0.98	Dec.	0	150	130	146	89					se.
Fort Lauderdale ..	do	7	67.19	13.56	May	0.40	April	0	127	183	110	72					e.
Fort Myers	Lee	53	46.62	10.89	June	1.43	Dec.	0	125	178	127	60					ne.
Griffin	Broward ..	7	62.64	12.70	July	0.76	Dec.	0	107	196	118	51					e.
Homestead	Dade	10	57.31	12.36	Aug.	0.94	Dec.	0	104	193	66	106					se.
Hypoluxo	Palm Beach	25	56.74	7.46	Nov.	0.25	Mar.	0	125	200	107	58					se.
Key West	Monroe ...	49	53.35	14.26	Sept.	0.18	Dec.	0	114	166	118	81					se.
Lock No. 1	Broward ...	7	69.43	11.52	June	0.20	Jan.	0	102	189	150	26					se.
Long Key	Monroe ...	4	45.93	7.69	Sept.	1.07	Jan.	0	107								e.
Miami (1)	Dade	29	60.04	13.31	May	1.81	Jan.	0	139	104	138	123					e.
Miami (2)	do	9	62.76	14.97	May	0.62	April	0	126	167	132	66					se.
Moore Haven	DeSoto ...	2	46.38	10.59	June			0	107								e.
Punta Gorda	do	5						0									
Ritta	Palm Beach	7															e.
Sand Key	Monroe ...	14															
Western Division.																	
Apalachicola	Franklin ..	16	71.25	12.43	July	2.17	Oct.	0	112								n.
Bonifay	Calhoun ...	14						0									nw.
DeFuniak Springs...	Holmes ...	22															
Garniers (near) ...	Walton ...	7	68.29	15.59	July	0.72	Sept.	0	91								se.
Marianna	Okaloosa ...	18	54.70	7.66	Feb.	1.98	Oct.	T.	90	117	174	74					sw.
Molino	Jackson ...	16															
Pensacola	Escambia ...	40	80.61	16.69	Aug.	0.76	Sept.	T.	126	114	107	144					s.
St. Andrews	Bay	23						0									sw.
Wausau	Washington	21	58.18	11.57	July	1.40	Sept.	0	85	115	118	132					s.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer						
Bristol			9.44		8.39	
Camp Johnston	1.77					
Carrabelle	1.57	-1.76	4.89	+0.46	6.83	+2.84
Cedar Keys	2.36	-1.20	3.72	+1.00	5.07	+2.15
Crescent City	1.41	-1.29	4.04	+0.40	4.94	+2.11
Federal Point	1.74	-1.16	4.13	+0.81	8.14	+5.03
Fenholloway	2.77	-0.60			5.41	+1.99
Fernandina	1.15	-1.72	4.35	+0.81	4.85	+1.57
Gainesville	2.06	-1.30	4.50	+1.49	5.37	+2.13
Hilliard	2.52		4.24		4.47	
Jacksonville	1.73	-1.39	3.77	+0.34	3.24	-0.28
Jacksonville (2)	1.76					
Jasper	2.55	-0.44	7.00	+2.82	4.56	+0.56
Johnstown	2.20	-0.41	4.78	+0.91	6.56	+3.51
Lake City	3.21	-0.40	4.85	+0.68	5.41	+1.21
Live Oak						
Macclenny	2.12	-0.46	5.24	+1.19	4.90	+1.20
Madison	1.85	-1.91	7.67	+3.07	5.85	+2.17
Melrose	1.89		4.44		7.41	
Middleburg	1.76	-1.12	4.18	+0.54	7.24	+3.33
Monticello						
Mount Pleasant	2.85	-0.27	9.52	+3.54	9.17	+5.86
Old Town	2.74		4.41		6.81	
Quincy	3.24		10.33		6.78	
St. Augustine	1.64	-1.07	3.80	+0.81	4.70	+1.72
Satsuma Heights	1.82	-0.45	4.49	+2.31	6.35	+4.04
Switzerland	2.18	-0.47	4.04	+0.71	4.30	+0.88
Tallahassee	2.22	-1.72	8.31	+3.38	6.63	+1.76
Central Division.						
Bartow	1.84	-0.69	4.91	+2.03	6.56	+4.14
Brooksville	2.69	-0.52	3.31	-0.11	3.97	+1.65
Clermont	2.72	-0.08	4.90	+1.67	4.86	+2.80
DeLand	1.40	-1.66	3.33	-0.04	4.99	+2.56
Eustis	1.98	-1.13	4.07	+1.03	4.37	+1.75
Fellsmere	1.19		3.06		2.44	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Fort Meade	2.28	-0.31	3.85	+1.21	5.53	+2.78
Fort Pierce	2.16	-1.23	4.30	+1.44	5.64	+2.80
Inverness	2.05	-0.72	3.39	+0.10	.....	.....
Isleworth	2.90	.....	5.25	.....	4.20	.....
Kissimmee	2.68	-0.25	4.81	+1.21	6.18	+3.88
Lakeland	3.40	.....	5.55	.....	5.72	.....
Lucerne Park	2.97	.....	4.53	.....	4.43	.....
Lynne (near)	1.56	.....	2.95	.....	4.86	.....
Malabar	1.66	-1.20	4.70	+2.35	2.68	+0.55
McDonald	2.70	-0.22	3.08	+0.09	4.71	+2.72
Merritts Island	2.74	-0.34	6.13	+3.50	4.69	+2.21
New Smyrna	1.84	-1.46	3.53	+0.53	5.28	+2.37
Ocala	2.38	-0.13	2.95	-0.32	5.07	+2.24
Okeechobee	0.51	.....	3.22	.....	3.18	.....
Orange City	1.60	-1.00	2.88	+0.20	4.24	+1.55
Orlando	3.01	+0.29	4.25	+1.51	5.68	+3.34
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	3.06	.....	6.02	.....	6.85	.....
Plant City	2.95	+0.35	6.77	+3.50	.....	.....
Rockwell	2.33	-0.78	.....	.....	.....	.....
St. Cloud .....	.....	.....	3.99	.....	4.57	.....
St. Leo	3.73	+0.19	4.80	+1.20	5.49	+2.93
St. Petersburg	2.70	.....	5.57	.....	5.94	.....
Sanford	2.16	-0.47	3.66	+1.85	4.10	+1.01
Tampa	2.44	-0.36	5.98	+2.71	4.97	+2.16
Tarpon Springs	2.55	-0.32	3.51	+0.36	2.91	+0.51
Titusville	2.32	+0.14	4.75	+1.44	5.27	+2.67
Southern Division.						
Arcadia .....	.....	.....	.....	.....	.....	.....
Avon Park	2.44	+0.07	4.22	+1.36	1.62	-0.55
Boca Grande	0.10	.....	2.47	.....	4.64	.....
Bradentown	2.94	+0.02	3.98	+0.87	4.62	+2.13
Davie	1.21	.....	2.62	.....	8.26	.....
Fort Lauderdale	1.38	.....	1.89	.....	12.21	.....
Fort Myers	1.29	-0.96	2.78	+0.55	4.64	+2.59
Griffin	1.41	.....	2.41	.....	6.00	.....
Homestead	1.39	.....	3.06	.....	3.02	.....
Hypoluxo	2.05	-1.32	5.12	+1.74	6.24	+3.89

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal—Continued.

STATIONS.	January.		February.		March.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Key West	0.74	-1.24	1.44	-0.20	0.25	-1.23
Lock No. 1	1.32	.....	3.45	.....	9.89	.....
Long Key	0.20	.....	4.38	.....	0.98	.....
Miami (1)	1.07	-2.38	3.20	+0.50	9.74	+7.02
Miami (2)	1.81	.....	4.03	.....	9.32	.....
Moore Haven	1.25	.....	3.70	.....	2.83	.....
Punta Gorda	1.46	.....	.....	.....	.....	.....
Ritta .....	.....	.....	.....	.....	.....	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.*						
Apalachicola	2.90	-1.28	10.44	+6.94	10.59	+7.74
Bonifay	5.48	+1.07	10.59	+5.29	5.58	+1.55
DeFuniak Springs .....	.....	.....	.....	.....	.....	.....
Garniers (near)	6.45	.....	8.65	.....	3.28	.....
Marianna	4.70	+1.24	7.66	+2.15	5.81	+0.52
Molino	5.10	+0.45	.....	.....	.....	.....
Pensacola	5.94	+1.90	12.53	+8.04	2.96	-2.40
St. Andrews	4.47	+1.04	6.91	+2.21	5.59	+1.78
Wausau	5.50	+1.62	7.70	+2.77	5.05	-0.31

T. Amount too small to measure. * Indicates plus.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer					8.96	+1.24
Bristol			4.85			
Camp Johnston						
Carrabelle	4.40	+2.09	2.69	-0.03	2.67	-2.20
Cedar Keys	1.10	-0.61	2.35	+0.56	6.00	+0.31
Crescent City	1.51	-0.57	10.88	+7.01	9.06	+3.27
Federal Point	2.50	-0.11	4.11	+0.37	11.93	+5.94
Fenholloway	4.53	+1.70	3.57	0.00	5.85	-2.28
Fernandina	0.97	-1.52	4.35	+0.96	12.19	+7.29
Gainesville	1.36	-0.55	4.67	+1.57	7.83	+1.13
Hilliard	1.57				9.16	
Jacksonville	1.26	-1.46	7.32	+3.07	13.79	+8.26
Jacksonville (2)						
Jasper					3.50	-3.18
Johnstown	1.38	-0.59	6.75	+3.21	11.77	+5.23
Lake City	2.67	+0.06	3.84	+0.73	8.01	+1.16
Live Oak					4.03	-3.70
Macclenny	1.85	-0.89			11.27	+5.60
Madison	3.33	+0.46	5.51	+1.38	6.10	+0.25
Melrose	1.80		5.15		7.98	
Middleburg	1.22	-1.57	9.35	+4.02	15.02	+8.15
Monticello						
Mount Pleasant	4.16	+0.48	8.64	+5.55	4.66	-1.45
Old Town	2.79		4.93		7.81	
Quincy	3.54		6.95		4.83	
St. Augustine	1.66	-0.98	4.74	+1.34	9.74	+4.57
Satsuma Heights	2.46	+0.53	9.55	+6.19	8.61	+3.07
Switzerland	2.06	-0.51	4.88	+1.58	15.48	*10.10
Tallahassee	3.09	-0.06	5.06	+1.33	7.10	+0.64
Central Division.						
Bartow	0.34	-1.52	4.67	+1.00	7.73	-0.28
Brooksville	1.24	-0.85	7.92	+4.40	10.72	+2.30
Clermont	1.74	-0.26	10.21	+6.63	5.59	-1.09
DeLand	1.50	-0.59	9.65	+5.97	5.63	-1.70
Eustis	1.41	-0.79	6.47	+2.97	8.83	+2.68

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Fellsmere	0.61	.....	3.29	.....	4.52	.....
Fort Meade	0.76	-1.23	6.87	+2.42	11.81	+2.43
Fort Pierce	2.15	-0.34	2.91	-1.21	4.18	-3.12
Inverness	0.87	-1.20	5.13	+0.95	8.83	+2.73
Isleworth	1.47	.....	8.55	.....	7.64	.....
Kissimmee	3.81	+1.75	5.77	+1.96	9.75	+2.86
Lakeland	0.94	.....	7.96	.....	6.84	.....
Lucerne Park	2.18	.....	11.71	.....	4.64	.....
Lynne (near)	1.38	.....	6.99	.....	5.73	.....
Malabar	0.54	-1.47	2.77	-1.28	5.66	+0.24
McDonald	0.92	-1.01	6.64	+3.11	5.72	+0.47
Merritts Island	0.27	-2.42	3.42	-0.33	6.82	+0.36
New Smyrna	0.85	-1.20	6.71	+3.41	3.50	-2.00
Ocala	0.75	-1.22	10.74	+7.11	3.80	-3.66
Okeechbee	0.90	.....	4.50	.....	6.70	.....
Orange City	0.62	-1.03	8.35	+4.90	2.96	-3.81
Orlando	1.17	-0.85	10.37	+6.56	5.19	-2.07
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	0.64	.....	2.29	.....	3.61	.....
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell	1.50	-0.25	4.67	+0.90	7.44	+0.38
St. Cloud	1.57	.....	4.76	.....	7.66	.....
St. Leo	0.63	-1.36	9.43	+5.60	12.16	+3.34
St. Petersburg	1.41	.....	2.46	.....	4.56	.....
Sanford	1.63	-1.51	7.25	+4.69	8.19	+1.86
Tampa	0.41	-1.44	4.40	+1.48	7.93	-0.41
Tarpon Springs	1.22	-0.50	2.92	+0.42	3.53	-3.40
Titusville	0.63	-1.21	6.57	+1.79	4.12	-3.18
Southern Division.						
Arcadia	0.91	-0.85	6.26	+2.30	6.91	-0.55
Avon Park	0.87	-1.08	6.04	+1.18	8.46	-0.88
Boca Grande	0.22	.....	4.75	.....	3.33	.....
Bradentown	1.66	-0.22	4.56	+1.53	7.31	-0.88
Davie	8.52	.....	7.18	.....	7.94	.....
Fort Lauderdale	5.84	.....	13.56	.....	6.95	.....
Fort Myers	0.40	-1.90	5.18	+1.29	10.89	+1.72
Griffin	3.51	.....	6.59	.....	8.46	.....
Homestead	2.67	.....	7.05	.....	12.15	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Hypoluxo	3.56	+0.83	3.88	-2.07	6.12	-2.70
Key West	3.11	+1.81	6.81	+3.45	11.04	+6.79
Lock No. 1	6.49	.....	6.45	.....	11.52	.....
Long Key	4.43	.....	3.14	.....	5.05	.....
Miami (1)	3.07	+0.48	13.31	+6.94	7.26	-0.63
Miami (2)	3.62	.....	14.97	.....	8.15	.....
Moore Haven	0.62	.....	6.70	.....	10.59	.....
Punta Gorda.....	1.12	.....	.....	.....	.....	.....
Ritta .....	.....	.....	6.44	.....	6.82	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	6.01	+3.53	7.80	+4.37	3.37	-1.55
Bonifay	4.05	+0.13	9.67	+5.55	1.25	-4.02
DeFuniak Springs .....	.....	.....	.....	.....	6.19	+0.52
Garniers (near)	5.20	.....	6.86	.....	0.95	.....
Marianna	4.40	+1.29	5.90	+2.24	2.77	-2.08
Molino .....	.....	.....	10.29	+5.45	6.13	+0.43
Pensacola	11.72	+8.56	4.47	+1.79	2.24	-2.63
St. Andrews	4.95	+2.59	3.77	-0.10	.....	.....
Wausau	4.81	+1.67	6.89	+2.44	2.90	-2.75

T. Amount too small to measure. * Indicates plus.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer	8.94	+0.40	7.58	-0.08	3.92	-2.20
Bristol						
Camp Johnston						
Carrabelle	7.96	+1.89	8.08	+0.92	1.02	-6.23
Cedar Keys	10.60	+2.58	13.63	+5.37	5.78	-0.06
Crescent City	12.85	+6.26	5.94	-1.24	5.18	-1.66
Federal Point	9.27	+2.37	8.75	+1.65	10.27	+2.47
Fenholloway	10.89	+2.29				
Fernandina	7.79	+1.79	10.55	+4.39	4.75	-3.51
Gainesville	6.49	-0.73	8.12	+1.25	6.90	+1.18
Hilliard	13.58		9.68		4.71	
Jacksonville	6.32	+0.12	6.96	+0.75	5.63	-2.40
Jacksonville (2)						
Jasper						
Johnstown	11.27	+3.33	4.78	-3.22	2.88	-2.39
Lake City	9.98	+2.21	8.75	+2.00	3.80	-1.58
Live Oak	5.59	-1.20				
Macleenny						
Madison	6.34	-1.11	4.45	-2.82	2.59	-2.93
Melrose	5.57		6.26		5.72	
Middleburg	4.44	-2.82	3.69	-2.95	6.29	-0.63
Monticello	11.82	+5.44	4.74	-1.50	0.86	-5.39
Mount Pleasant	8.29	+0.35	7.03	+2.11	0.43	-5.82
Old Town	9.36		10.69		4.72	
Quincy	9.18		9.72		1.02	
St. Augustine	4.21	-1.04	5.96	-0.09	10.26	+3.77
Satsuma Heights	6.11	-0.40	9.35	+2.27	6.19	+1.30
Switzerland	9.95	+2.48	10.32	+3.90	7.56	-0.50
Tallahassee	10.23	+2.71	7.54	+0.50	1.26	-3.83
Central Division.						
Bartow	10.16	+2.75	6.71	-1.18	3.39	-4.62
Brooksville	9.68	-0.03	3.45	-5.56	4.37	-2.63
Clermont	5.09	-2.34	10.62	+3.09	2.79	-3.80
DeLand	8.37	+0.48	5.65	-1.79	4.00	-1.31
Eustis	5.53	-1.50	5.47	-0.97	5.28	-1.07

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Fellsmere	9.20	.....	9.27	.....	10.13	.....
Fort Meade	2.02	+2.97	9.36	+0.28	6.00	-2.23
Fort Pierce	9.43	+4.00	5.33	-0.79	2.82	-4.27
Inverness	8.81	-1.14	4.56	-2.88	5.74	-0.04
Isleworth	6.42	.....	6.53	.....	4.49	.....
Kissimmee .....	.....	.....	.....	.....	.....	.....
Lakeland	10.16	.....	8.99	.....	5.30	.....
Lucerne Park	7.22	.....	.....	.....	.....	.....
Lynne (near)	7.33	.....	6.71	.....	3.74	.....
Malabar	4.90	+0.18	.....	.....	3.72	-3.71
McDonald	5.87	-1.63	3.70	-3.25	4.59	-1.31
Merritts Island ..	4.12	-1.32	11.84	+6.31	8.39	+0.73
New Smyrna	8.29	+2.74	5.23	-0.67	.....	.....
Ocala	4.52	-3.49	8.99	+1.50	4.03	-2.76
Ckeechobee	3.12	.....	5.40	.....	3.84	.....
Orange City	7.25	+0.92	4.94	-2.08	4.29	-1.53
Orlando	11.49	+4.24	5.46	-1.69	2.38	-5.01
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	16.87	.....	3.53	.....	3.91	.....
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell .....	.....	.....	.....	.....	.....	.....
St. Cloud	6.23	.....	8.14	.....	3.56	.....
St. Leo	8.71	-0.14	8.32	-1.01	2.97	-3.50
St. Petersburg	4.97	.....	3.37	.....	6.59	.....
Sanford	9.40	+2.59	6.11	+0.25	4.46	-1.19
Tampa	1.80	+3.37	3.63	-4.96	6.82	-0.59
Tarpon Springs	5.02	+6.92	6.56	-3.23	2.65	-4.40
Titusville	7.66	+1.19	15.57	*10.18	7.06	-0.50
Southern Division.						
Arcadia	5.48	-2.81	5.61	-3.29	4.89	-1.33
Avon Park	8.71	*10.86	6.50	-0.98	7.01	+1.20
Boca Grande	7.29	.....	2.41	.....	4.02	.....
Bradentown	4.02	+3.60	5.83	-3.36	5.15	-2.45
Davie	6.79	.....	6.53	.....	7.07	.....
Fort Lauderdale	4.19	.....	7.06	.....	6.60	.....
Fort Myers	8.21	+0.21	3.12	-5.21	5.04	-2.63
Griffin	2.70	.....	7.13	.....	7.27	.....
Homestead	5.13	.....	12.36	.....	5.28	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Hypoluxo	7.16	+1.81	3.80	-1.12	3.48	-5.05
Key West	5.25	+1.66	1.46	-3.23	14.26	+7.47
Lock No. 1	6.77	.....	5.44	.....	5.28	.....
Long Key	5.55	.....	6.77	.....	7.69	.....
Miami (1)	5.90	-1.34	3.73	-3.87	3.72	-5.89
Miami (2)	5.23	.....	3.86	.....	3.92	.....
Moore Haven	6.88	.....	4.12	.....	2.78	.....
Punta Gorda	6.52	.....	4.08	.....	8.94	.....
Ritta	4.33	.....	4.44	.....	10.81	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	2.43	+5.39	4.72	-3.13	5.98	-3.71
Bonifay	3.79	+8.15	5.59	+0.91	2.41	-2.52
DeFuniak Springs	2.45	+5.00	7.95	-1.29	1.95	-4.42
Garniers (near)	5.59	.....	7.06	.....	0.72	.....
Marianna	7.44	+0.82	2.54	-2.92	3.45	-2.52
Molino	9.25	+1.77	.....	.....	.....	.....
Pensacola	7.74	+0.47	16.69	+9.53	0.76	-4.47
St. Andrews	8.87	*11.96	5.82	-2.68	3.38	-3.77
Wausau	1.57	+4.31	4.68	-2.59	1.40	-5.34

T. Amount too small to measure. * Indicates plus.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	October.		November.		December.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer	1.87	-0.97	3.18	+0.99	.....	.....
Bristol .....	.....	.....	.....	.....	.....	.....
Camp Johnston .....	.....	.....	.....	.....	.....	.....
Carrabelle	1.00	-2.12	5.52	+0.34	2.96	-2.33
Cedar Keys	1.80	-1.32	3.00	+0.68	1.50	-1.08
Crescent City	1.51	-2.25	2.25	+0.72	3.77	+1.17
Federal Point	4.98	+0.03	3.02	+0.98	5.57	+2.72
Fenholloway .....	.....	.....	.....	.....	.....	.....
Fernandina	1.75	-3.35	1.35	-1.25	3.90	+0.54
Gainesville	3.32	+0.64	1.46	-0.43	2.23	-0.82
Hilliard	2.27	.....	1.05	.....	2.82	.....
Jacksonville	1.81	-3.25	1.06	-1.13	4.61	+1.62
Jacksonville (2) .....	.....	.....	.....	.....	4.62	.....
Jasper .....	.....	.....	.....	.....	0.40	-3.41
Johnstown	1.29	-1.76	.....	.....	.....	.....
Lake City	1.83	-1.20	3.11	+0.57	2.48	-1.14
Live Oak .....	.....	.....	.....	.....	.....	.....
Macclenny .....	.....	.....	.....	.....	.....	.....
Madison	1.78	-1.12	2.33	+0.19	2.83	-0.95
Melrose	1.27	.....	1.49	.....	2.82	.....
Middleburg	5.19	+0.87	1.78	+0.32	7.13	+4.07
Monticello	0.96	-1.92	1.41	-0.74	2.68	-2.81
Mount Pleasant	1.42	-1.46	1.80	-0.16	2.37	-2.25
Old Town	4.69	.....	3.38	.....	2.14	.....
Quincy	1.57	.....	2.72	.....	3.79	.....
St. Augustine	5.53	+0.55	2.46	+0.18	5.09	+2.41
Satsuma Height	1.52	-3.25	2.32	+0.42	5.18	+1.58
Switzerland	4.70	+0.32	1.19	-0.97	4.03	+1.15
Tallahassee	0.57	-2.58	0.81	-1.84	2.32	-2.28
Central Division.						
Bartow	0.77	-2.92	2.16	+0.38	2.35	-0.04
Brooksville	0.74	-2.63	2.39	+0.62	1.63	-0.85
Clermont	0.93	-2.61	2.05	+0.55	4.58	+2.27
DeLand	1.27	-3.62	1.93	+0.24	3.33	+1.19
Eustis	1.02	-2.37	5.49	+3.92	3.61	+1.29

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	October.		November.		December.	
	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.
Fellsmere	1.19	.....	5.73	.....	2.63	.....
Fort Meade	0.66	-3.39	2.02	+0.47	1.06	-1.27
Fort Pierce	0.60	-5.56	7.32	+4.18	2.14	-0.13
Inverness	0.88	-1.89	3.97	+2.25	2.56	-0.22
Isleworth	0.58	.....	3.00	.....	4.15	.....
Kissimmee .....	.....	.....	.....	.....	.....	.....
Lakeland	1.96	.....	3.71	.....	3.26	.....
Lucerne Park .....	.....	.....	.....	.....	.....	.....
Lynne (near)	0.85	.....	1.98	.....	2.83	.....
Malabar	4.27	-2.84	9.09	+6.72	2.02	-0.78
McDonald	1.68	-2.77	4.62	+2.43	3.90	+1.76
Merritts Island	1.49	-4.32	4.34	+2.05	3.06	+0.61
New Smyrna	5.45	-0.54	4.72	+1.93	3.82	+1.31
Ocala	3.85	+1.06	3.93	+2.17	3.80	+1.32
Okeechobee	1.00	.....	.....	.....	.....	.....
Orange City	0.61	-3.80	2.49	+0.73	3.44	+1.48
Orlando	0.80	-4.35	3.99	+2.40	3.45	+1.30
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	2.09	.....	1.61	.....	2.70	.....
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell .....	.....	.....	.....	.....	.....	.....
St. Cloud	0.56	.....	.....	.....	2.78	.....
St. Leo	1.60	-1.73	3.12	+1.15	2.42	-0.27
St. Petersburg	3.32	.....	2.34	.....	1.84	.....
Sanford	1.55	-4.98	4.37	+2.91	5.04	+2.86
Tampa	1.41	-1.56	2.47	+0.75	1.42	-0.60
Tarpon Springs	1.04	-1.73	5.13	+3.20	2.73	+0.29
Titusville	1.78	-3.69	5.96	+3.51	2.67	-0.11
Southern Division.						
Arcadia	1.68	-2.12	2.82	+1.44	1.98	-0.24
Avon Park	0.85	-3.54	1.46	-0.19	1.51	-0.71
Boca Grande .....	.....	.....	.....	.....	0.08	.....
Bradentown	1.63	-1.39	2.84	+1.13	3.26	+0.67
Davie	4.87	.....	1.95	.....	1.53	.....
Fort Lauderdale	4.81	.....	1.72	.....	0.98	.....
Fort Myers	0.81	-2.66	3.09	+1.79	1.17	-0.55
Griffin	4.21	.....	1.49	.....	1.43	.....
Homestead	2.62	.....	1.82	.....	0.76	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	October.		November.		December.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Hypoluxo	6.93	-3.28	7.46	+4.04	0.94	-1.49
Key West	2.66	-2.72	5.23	+2.87	1.10	-0.74
Lock No. 1	8.87	.....	2.75	.....	1.18	.....
Long Key	3.47	.....	2.32	.....	1.95	.....
Miami (1)	3.73	-6.81	3.48	+0.93	1.83	-0.41
Miami (2)	2.91	.....	2.80	.....	2.11	.....
Moore Haven	0.90	.....	4.86	.....	1.15	.....
Punta Gorda	3.11	.....	1.27	.....	1.78	.....
Ritta	0.04	.....	1.69	.....	1.47	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	2.17	-1.37	2.54	-0.15	2.30	-2.63
Bonifay .....	.....	.....	11.92	+9.18	3.03	-1.40
DeFuniak Springs	4.67	+1.10	11.33	+7.70	3.82	-1.28
Garniers (near)	3.00	.....	6.95	.....	3.58	.....
Marianna	1.98	-1.03	4.90	+2.32	3.15	-1.16
Molino .....	.....	.....	.....	.....	.....	.....
Pensacola	8.73	+4.65	2.68	-1.06	4.15	-0.02
St. Andrews	3.63	-0.59	6.39	+3.36	2.69	-2.46
Wausau	4.32	+1.49	1.68	-1.97	1.59	-3.67

T. Amount too small to measure. * Indicates plus.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	Annual.	
	Precipitation.	Departure.
Northern Division		
Archer		
Bristol		
Camp Johnston		
Carrabelle	46.59	— 6.18
Cedar Keys	55.91	+ 8.38
Crescent City	63.34	+13.93
Federal Point	74.41	+21.10
Fenholloway		
Fernandina	57.95	+ 5.50
Gainesville	54.31	+ 5.56
Hilliard	64.23	
Jacksonville	57.50	+ 4.25
Jacksonville (2)		
Jasper		
Johnstown		
Lake City	57.94	+ 4.39
Live Oak		
Macclenny		
Madison	50.63	— 3.32
Melrose	51.80	
Middleburg	67.29	+12.21
Monticello		
Mount Pleasant	60.34	+ 6.48
Old Town	64.47	
Quincy	63.67	
St. Augustine	59.79	+12.17
Satsuma Height	63.95	+17.61+
Switzerland	70.69	+18.67+
Tallahassee	55.14	— 2.00
Central Division.		
Bartow	51.59	— 0.95
Brooksville	52.11	— 4.21
Clermont	56.08	+ 6.83
DeLand	51.05	— 0.27
Eustis	53.53	+ 5.81

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	Annual.	
	Precipitation.	Departure.
Fallsmere	53.28	.....
Fort Meade	62.22	+ 4.13
Fort Pierce	49.07	- 4.23
Inverness .....	.....	.....
Isleworth	55.18	.....
Kissimmee .....	.....	.....
Lakeland	63.79	.....
Lucerne Park .....	.....	.....
Lynne (near)	46.91	.....
Malabar .....	.....	.....
McDonald	48.13	- 0.39
Merritts Island	57.31	+ 7.09
New Smyrna .....	.....	.....
Ocala	54.81	+ 3.82
Okeechobee .....	.....	.....
Orange City	43.67	- 3.77
Orlando	57.24	+ 5.67
Oxford .....	.....	.....
Pinellas Park	53.18	.....
Plant City .....	.....	.....
Rockwell .....	.....	.....
St. Cloud .....	.....	.....
St. Leo	63.38	+ 6.40
St. Petersburg	55.07	.....
Sanford	57.92	+ 9.87
Tampa	53.68	+ 0.55
Tarpon Springs	49.77	- 1.88
Titusville	64.36	+12.23
Southern Division.		
Arcadia .....	.....	.....
Avon Park	59.69	+ 6.74
Boca Grande .....	.....	.....
Bradentown	57.80	+ 1.65
Davie	64.47	.....
Fort Lauderdale	67.19	.....
Fort Myers	46.62	- 5.76
Griffin	62.64	.....
Homestead	57.31	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	Annual.	
	Precipitation.	Departure.
Hypoluxo	56.74	— 4.81
Key West	53.35	+14.69
Lock No. 1	69.43	.....
Long Key	45.93	.....
Miami (1)	60.04	— 5.46
Miami (2)	62.76	.....
Moore Haven	46.38	.....
Punta Gorda .....	.....	.....
Ritta .....	.....	.....
Sand Key .....	.....	.....
Western Division.		
Apalachicola	71.25	+14.15
Bonifay .....	.....	.....
DeFuniak Springs .....	.....	.....
Garniers (near)	68.29	.....
Marianna	54.70	+ 0.87
Molino .....	.....	.....
Pensacola	80.61	+24.36
St. Andrews .....	.....	.....
Wausau	58.18	— 2.33

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer					78.7	— 1.5
Bristol	64.8 ^s		71.8			
Camp Johnston						
Carrabelle	65.3	— 1.8	72.6	— 2.6		
Cedar Keys	70.4	+ 0.7	76.4	+ 0.5	79.5	— 1.1
Crescent City	68.2	— 1.0	76.4	0.0	78.3	— 2.1
Federal Point	68.4	+ 0.1	76.2	+ 1.5	78.7	— 0.5
Fenholloway	67.0		74.0		79.6	
Fernandina	65.8	— 1.7	74.5	+ 0.5	77.4	— 1.9
Gainesville	67.8	— 1.4	75.3	— 1.1	78.1	— 2.6
Hilliard	66.2		74.8		77.9	
Jacksonville	67.3	— 0.3	74.8	+ 0.6	77.4	— 1.6
Jacksonville (2)						
Jasper						
Johnstown	66.7	— 1.2	74.6	— 0.2	77.3 ¹	— 2.7
Lake City	67.8	— 1.0	75.1	— 0.5	78.9	— 1.0
Live Oak					80.6	+ 0.7
Macclenny	67.2	0.0			78.2 ¹	— 1.2
Madison	67.3	— 1.1	74.2 ⁴	— 1.6	78.4	— 2.0
Middleburg	66.6 ⁴	— 0.6	74.6 ⁴	+ 0.8	77.7 ⁵	— 1.6
Monticello						
Mount Pleasant	65.8	— 1.4	73.5	— 1.4	74.4	— 0.5
Old Town	66.7		74.6		78.8	
Quincy	64.9				78.4	
St. Augustine	66.7	— 1.6	74.8	+ 0.8	78.4	— 0.6
Satsuma Heights	68.9	— 0.9	77.7	+ 2.2	79.0	— 1.2
Switzerland	65.3 ³	— 2.6	74.3 ¹	— 0.4	77.0 ³	— 1.8
Tallahassee	66.8	— 0.3	73.3	— 1.3	78.8	— 0.3
Central Division.						
Bartow	68.4	— 2.9	75.8	— 1.1	78.8	— 1.6
Brooksville	67.8	— 2.3	74.2	— 2.5	78.3	— 1.8
Clermont	70.8	— 1.6	77.6	— 0.8	80.1 ²	— 1.4
DeLand	69.3	+ 0.8	77.2	+ 1.9	79.4	+ 0.4
Eustis	70.3	— 0.7	78.0	+ 0.6	79.4	— 1.5
Fellsmere	69.0		76.1		78.3	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Fort Meade	69.8	— 0.4	76.2	— 0.4	79.9	— 0.4
Fort Pierce	71.8	+ 0.3	77.8 ¹	+ 2.0	80.2	+ 1.1
Inverness	71.1 ¹	+ 1.5	75.8	— 0.3	79.6 ¹	— 0.4
Kissimmee	70.8	— 0.8	77.2	— 0.3	80.0	— 0.4
Lakeland	71.0	.....	76.0	.....	78.2	.....
Lucerne Park	79.9	.....	77.0	.....	79.8	.....
Malabar	71.7	+ 0.3	77.4	+ 1.0	80.4	+ 0.7
McDonald	69.1	— 1.3	76.4	— 0.2	78.1	— 2.5
Merritts Island	69.0	— 2.6	76.2	— 0.1	78.6	— 0.9
New Smyrna	66.5	— 2.0	74.3	+ 0.4	77.3	— 1.1
Ocala	65.8	— 3.9	74.0	— 2.1	77.7	— 2.2
Okeechobee	69.0	.....	76.2	.....	79.0	.....
Orange City .....	.....	.....	76.0	— 0.7	79.0	— 1.5
Orlando	70.0	— 1.0	76.2	— 0.7	79.4	— 1.0
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	69.4	.....	75.0	.....	79.6	.....
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell .....	.....	.....	.....	.....	.....	.....
St. Cloud .....	.....	.....	77.4 ¹	.....	79.9	.....
St. Leo	69.0	— 1.8	74.6	— 2.6	77.2	— 3.2
St. Petersburg	71.5	.....	76.9	.....	80.6	.....
Sanford	68.3	— 0.9	76.1	+ 0.9	78.3	— 0.8
Tampa	70.8	— 0.2	76.8	+ 0.4	79.7	— 0.3
Tarpon Springs	69.8	— 0.5	76.8	+ 1.2	80.2	+ 0.5
Titusville	68.8	— 0.9	76.0	+ 0.7	78.9	— 0.1
Southern Division.						
Arcadia .....	.....	.....	77.8 ¹	+ 0.4	81.2	+ 0.3
Avon Park	71.0	— 1.1	75.8	— 1.5	78.3	— 1.6
Boca Grande .....	.....	.....	76.8	.....	79.4	.....
Bradentown	69.2	— 1.3	74.8	— 1.3	79.4	— 0.4
Davie .....	.....	.....	.....	.....	.....	.....
Fort Lauderdale	72.0	.....	77.0	.....	79.2	.....
Fort Myers	71.1	— 1.3	76.3	— 0.8	79.9	— 0.1
Griffin	68.8	.....	74.6	.....	77.2	.....
Homestead	71.4	.....	77.2	.....	78.8	.....
Hypoluxo	72.2	— 0.8	76.4	— 0.8	78.4	— 1.0
Key West	75.5	0.0	79.2	+ 0.2	80.5	— 1.7
Long Key	75.7	.....	80.7	.....	81.6	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Temperature.	Departure.	Temperature.	Departure.	Departure.	Temperature.
Miami (1)	72.6	— 1.6	76.4	— 2.2	79.0	— 1.4
Miami (2)	73.2	.....	76.8	.....	79.1	.....
Moore Haven	69.4	.....	76.1	.....	78.7	.....
Punta Gorda .....	.....	.....	.....	.....	.....	.....
Ritta .....	.....	.....	75.6 ¹	.....	79.0 ¹	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	65.2	— 2.6	73.0	— 2.0	80.0	— 0.4
Bonifay	66.0	— 0.9	74.0 ¹	— 0.2	79.9 ¹	+ 0.5
DeFuniak Springs .....	.....	.....	.....	.....	.....	.....
Garniers (near)	64.2	.....	71.6	.....	78.7	.....
Marianna	67.0	+ 0.9	73.6	— 0.9	79.8	+ 0.1
Molino .....	.....	.....	71.5	— 1.1	78.9 ¹	0.0
Pensacola	65.0	— 2.7	71.7	— 3.1	78.4	— 1.6
St. Andrews .....	.....	.....	.....	.....	.....	.....
Wausau	66.4	+ 0.1	73.4	— 2.1	79.6	— 9.9

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer						
Bristol					60.9	
Camp Johnston	56.0 ^o					
Carrabelle	52.6	- 0.6	54.2	- 0.2	62.2	+ 0.6
Cedar Keys	57.8 ^o	+ 0.8	59.8	+ 0.8	68.8	+ 5.6
Crescent City	57.4	+ 0.9	59.8	+ 1.6	65.6	0.0
Federal Point	57.6	+ 1.0	59.8	+ 2.0	65.8	+ 1.4
Fenholloway	53.4				65.4	
Fernandina	54.6 ¹	+ 0.7	56.0	+ 0.7	63.2 ¹	+ 0.9
Gainesville	55.5	- 0.6	57.4	+ 0.8	64.8	- 0.1
Hilliard	53.0		56.5		63.8	
Jacksonville	55.3	+ 1.4	57.6	+ 0.7	63.8	+ 1.9
Jacksonville (2)	55.3					
Jasper	52.2	- 1.4	56.4	+ 2.3	67.3 ¹	+ 4.6
Johnstown	54.7	- 0.5	57.0	+ 0.5	64.6	+ 0.5
Lake City	53.9	- 1.5	56.5	- 0.7	65.2	+ 1.8
Live Oak						
Macclenny	54.2	- 0.6	56.4 ¹	+ 0.6	63.6	- 0.1
Madison	53.2	- 1.1	55.7	+ 0.4	64.2	+ 1.9
Middleburg	54.2 ¹	- 0.4	57.8 ¹	+ 2.4	64.2 ⁵	+ 0.9
Monticello						
Mount Pleasant	50.6	- 4.6	53.9	+ 0.6	62.4	+ 0.8
Old Town	55.6		57.6		66.0	
Quincy	50.9		53.8		62.1	
St. Augustine	56.1	- 0.2	58.4	- 0.2	64.2	+ 1.3
Satsuma Heights	57.4	- 0.6	59.4 ¹	+ 1.0	65.8	+ 1.8
Switzerland	53.3 ²	- 1.7	55.8 ¹	- 0.5	63.6 ¹	- 0.2
Tallahassee	52.3 ²	- 0.1	55.3	+ 0.9	63.0	+ 1.9
Central Division.						
Bartow	60.4	- 0.3	62.0	- 1.0	68.6	+ 1.4
Brooksville	57.4	- 1.1	59.6	- 6.3	66.0	1.0
Clermont	60.6	+ 0.2	62.6	+ 0.6	68.9	+ 0.4
De Land	58.4	+ 0.2	61.0	+ 1.9	67.2	+ 1.7
Eustis	58.0	- 0.9	61.0	+ 0.2	67.4	+ 0.6
Fellsmere	61.8		63.6		69.4	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Fort Meade	59.6	- 0.2	61.4	+ 0.2	68.4	+ 1.3
Fort Pierce	61.6 ^a	- 2.0	65.2	+ 1.3	70.8	+ 2.4
Inverness	56.3	- 0.4	59.4	+ 1.8	68.5 ^a	+ 3.0
Kissimmee	60.6	- 0.3	62.0 ^a	+ 0.5	68.3	+ 1.1
Lakeland	60.9	.....	62.4	.....	69.0	.....
Lucerne Park	60.3	.....	62.4	.....	68.9	.....
Malabar	62.2 ²	+ 0.4	63.8 ¹	+ 0.6	70.1 ¹	+ 2.9
McDonald	58.8	+ 0.3	60.6	+ 0.3	67.2	+ 0.6
Merritts Island	60.8	- 1.2	60.9	- 2.9	66.9	- 0.3
New Smyrna	57.4	- 0.9	59.4	+ 0.4	64.3	- 0.2
Ocala	54.6	- 2.7	57.9	- 1.4	64.0	- 0.8
Okeechobee	62.6	.....	63.9 ^a	.....	69.8	.....
Orange City	57.6	- 1.1	59.8	- 0.2	65.2	- 0.7
Orlando	60.1	+ 0.3	62.4	+ 1.1	68.4	+ 1.1
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	62.6	.....	62.2	.....	68.6	.....
Plant City	61.0	+ 0.5	61.8	+ 0.1	.....	.....
Rockwell	56.6 ¹	- 1.2	.....	.....	.....	.....
St. Cloud .....	.....	.....	63.4	.....	69.4	.....
St. Leo	58.2	- 1.7	60.1	- 0.8	66.8	- 0.4
St. Petersburg	60.3	.....	62.6	.....	69.4	.....
Sanford	58.4	- 0.3	60.0	- 2.0	66.6	+ 2.3
Tampa	59.7	- 0.4	61.8	- 0.5	68.8	+ 2.5
Tarpon Springs	58.3	- 0.7	61.1	0.0	67.6	+ 2.0
Titusville	59.4	- 0.8	61.6	- 0.1	66.4	+ 1.2
Southern Division						
Arcadia .....	.....	.....	.....	.....	.....	.....
Avon Park	61.4	- 0.6	63.4	+ 0.3	63.0	+ 1.0
Boca Grande	64.0	.....	63.0 ¹	.....	69.9	.....
Bradentown	60.2	- 0.4	62.5	+ 0.3	68.5	+ 2.3
Davie .....	.....	.....	.....	.....	.....	.....
Fort Lauderdale	65.9	.....	67.2	.....	71.6	.....
Fort Myers	62.9	- 0.4	64.6	- 0.3	71.0	+ 2.3
Griffin	64.6	.....	65.8	.....	70.1	.....
Homestead	65.5	.....	66.7	.....	71.8	.....
Hypoluxo	65.8	- 0.2	66.6	- 0.1	71.7	+ 1.4
Key West	68.1	- 0.7	70.4	- 0.4	75.0	+ 2.2

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Long Key	67.2 ³	.....	69.4	.....	74.8	.....
Long Key	67.2 ³	.....	69.4	.....	74.8	.....
Miami (1)	65.1	— 2.2	66.6	— 2.2	71.7	— 0.3
Miami (2)	66.2	.....	67.4	.....	72.2	.....
Moore Haven .....	.....	.....	64.8 ¹	.....	70.2	.....
Punta Gorda .....	.....	.....	.....	.....	.....	.....
Ritta	62.6	.....	64.4 ¹	.....	72.2	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	52.8	— 2.3	55.2	— 0.4	63.2	+ 0.7
Bonifay	50.5	— 2.2	53.4	— 0.5	62.4	— 1.6
DeFuniak Sprinks .....	.....	.....	.....	.....	.....	.....
Garniers (near)	49.8	.....	52.8	.....	61.2 ³	.....
Marianna	49.4	— 2.5	52.7	+ 0.6	61.8	+ 0.7
Molino	51.0 ¹	— 1.1	.....	.....	.....	.....
Pensacola	50.1	— 2.2	53.6	— 1.9	61.4	+ 0.3
St. Andrews .....	.....	.....	53.2	— 0.7	63.7 ¹	+ 2.6
Wausau	49.8	— 1.7	52.7	— 0.4	62.1	— 0.4

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer	79.5	— 2.2	80.6 ²	— 0.6	79.3 ¹	+ 0.3
Bristol						
Camp Johnston						
Carrabelle			80.6	— 0.8	78.3	— 0.2
Cedar Keys	80.3	— 2.0	82.1	+ 0.3	81.2	+ 1.7
Crescent City	81.6	— 0.5	81.6	— 0.3	77.5	— 1.9
Federal Point	82.2	+ 1.0	82.8	+ 1.6	79.1	+ 0.6
Fenholloway	80.0					
Fernandina	80.8	— 0.5	81.3 ¹	+ 0.3	78.2	0.0
Gainesville	80.2	— 1.5	81.1	— 0.6	78.6	— 0.1
Hilliard	81.7		81.8		77.6	
Jacksonville	81.0	+ 0.1	81.5	+ 1.4	77.4	+ 0.1
Jacksonville (2)						
Jasper						
Johnstown	79.6 ¹	— 2.0	80.6	— 0.8	78.4	— 0.5
Lake City	80.7 ¹	— 0.2	80.8	— 0.7	78.7	+ 0.3
Live Oak	82.2	0.0				
Maccleenny						
Madison	79.5	— 1.9	81.2	— 0.3	78.5	— 0.4
Middleburg	81.4 ⁴	— 0.2	83.0 ⁰	+ 1.9	78.2 ⁹	— 0.2
Monticelle	79.9	— 0.8	81.0 ¹	+ 0.5	78.6 ¹	+ 0.2
Mount Pleasant	79.8	— 0.4	80.6	+ 0.4	77.0	— 0.5
Old Town	80.0		81.0		79.6	
Quincy	79.5		79.6		77.6	
St. Augustine	81.2	+ 0.3	82.0	+ 1.3	77.4	— 1.2
Satsuma Heights	83.0	+ 1.7	82.3 ²	+ 1.2	78.6	+ 0.6
Switzerland	80.6	+ 0.2	81.0 ¹	+ 0.5	77.6 ¹	— 0.2
Tallahassee	79.6	— 0.8	81.0	+ 1.2	77.5	+ 0.9
Central Division.						
Bartow	81.4	— 0.1	82.2	+ 0.8	80.6	+ 0.9
Brooksville	78.9	— 1.9	80.4	— 0.5	79.4	— 0.2
Clermont	82.2	— 0.7	83.0	+ 0.2	81.2	+ 0.5
DeLand	82.1	+ 1.5	83.5	+ 2.0	80.4	+ 1.7
Eustis	82.6	+ 0.2	83.6	+ 1.3	80.4	+ 0.6
Fellemerre	80.8		82.1		80.5	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Fort Meade	80.8	0.0	81.8	+ 0.5	80.7	+ 1.0
Fort Pierce	82.3	+ 1.7	83.6	+ 2.6	81.4	+ 1.5
Inverness	79.9	— 0.8	81.0	+ 0.1	79.6	+ 0.6
Kissimmee	79.9	.....	.....	.....	.....	.....
Lakeland	79.4	.....	81.6	.....	79.4	.....
Lucerne Park	80.8	.....	.....	.....	.....	.....
Malabar	83.4	+ 1.8	.....	.....	82.0	+ 1.6
McDonald	81.0	— 0.8	81.9	+ 0.4	79.6	+ 0.4
Merritts Island	81.4	+ 0.1	81.2	— 0.3	79.4	— 0.7
New Smyrna	80.0	+ 0.1	81.4 ^o	+ 1.4	.....	.....
Ocala	81.2	— 0.2	81.5 ¹	+ 0.2	79.4	+ 0.6
Okeechobee	82.7	.....	82.9	.....	80.3 ¹	.....
Orange City	81.2	— 0.1	82.2	+ 0.4	79.9	+ 0.3
Orlando	81.4	— 0.7	82.4	+ 0.3	81.2	+ 1.7
Oxford	80.2	.....	.....	.....	.....	.....
Pinellas Park	80.2	.....	81.8	.....	80.5	.....
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell .....	.....	.....	.....	.....	.....	.....
St. Cloud	81.5	.....	81.1	.....	79.8	.....
St. Leo	78.8	— 2.6	79.5	— 1.9	78.4	— 1.2
St. Petersburg	81.2	.....	83.0	.....	81.4	.....
Sanford	80.4	— 0.7	81.2	+ 0.2	79.9	+ 1.2
Tampa	81.0	— 0.2	82.7	+ 1.3	80.8	+ 1.1
Tarpon Springs	81.2	+ 0.2	82.6	+ 1.4	81.1	+ 1.5
Titusville	81.1	+ 0.1	81.5	+ 0.3	80.0	+ 0.5
Southern Division.						
Arcadia	82.2	+ 0.3	84.0 ²	+ 2.2	80.9 ¹	+ 0.3
Avon Park	80.0	— 1.6	81.4	— 0.3	79.6	— 0.6
Boca Grande	82.4	.....	82.9	.....	.....	.....
Bradentown	80.8	— 0.1	82.1	+ 0.9	80.1	+ 0.2
Davie	79.6	.....	80.4	.....	79.1	.....
Fort Lauderdale	81.4	.....	82.0	.....	81.0	.....
Fort Myers	81.4	+ 0.5	82.6	+ 1.5	81.1	+ 1.2
Griffin	79.4	.....	80.8	.....	79.4	.....
Homestead	81.1	.....	81.5	.....	79.6	.....
Hypoluxo	80.1	— 1.5	81.6	0.0	79.9	— 0.9
Key West	82.6	— 1.1	84.2	+ 0.4	82.4	— 0.1
Long Key	83.4	.....	84.8	.....	82.6	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Miami (1)	80.8	— 1.1	82.6	+ 0.6	80.4	— 1.1
Miami (1)	81.6	.....	82.6	.....	81.6	.....
Moore Haven	79.6	.....	81.4	.....	79.3	.....
Punta Gorda	80.6 ¹	.....	82.2 ¹	.....	80.6	.....
Ritta	80.4 ¹	.....	82.0 ²	.....	79.8 ²	.....
Sand Key .....	.....	.....	.....	.....	81.6 ³	.....
Western Division.						
Apalachicola	80.9	— 1.0	81.4	— 0.3	79.2	— 0.2
Bonifay	80.2	— 0.7	81.6 ²	— 0.2	79.6 ⁴	+ 1.2
DeFuniak Springs	79.8	— 0.8	78.5	— 2.3	74.0	— 3.7
Garniers (near)	80.0	.....	80.3	.....	78.6	.....
Marianna	80.4	— 0.6	81.4	+ 0.2	79.1	+ 1.1
Molino	80.9	+ 1.2	.....	.....	.....	.....
Pensacola	80.0	— 1.4	80.1	— 0.9	77.8	— 0.1
St. Andrews	81.6 ²	— 0.7	82.0	+ 0.2	79.3	+ 0.2
Wausau	80.1	— 1.8	81.7	0.0	79.0	+ 1.0

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	October.		November.		December.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer	79.5 ³	+ 7.9	67.2 ²	+ 4.2	.....	.....
Bristol .....	.....	.....	.....	.....	.....	.....
Camp Johnston .....	.....	.....	.....	.....	.....	.....
Carrabelle	78.2	+ 7.4	65.6	+ 3.9	54.1	— 0.1
Cedar Keys	81.1	+ 8.5	69.6	+ 5.9	59.4	+ 1.0
Crescent City	76.7	+ 4.5	67.2	+ 2.5	59.4	+ 2.2
Federal Point	79.0	+ 7.1	68.6	+ 4.6	59.2	+ 1.8
Fenholloway .....	.....	.....	.....	.....	55.2	.....
Fernandina	78.2	+ 6.8	67.3	+ 5.1	56.0 ³	0.0
Gainesville	78.2	+ 6.8	67.2	+ 4.2	57.1	+ 0.7
Hilliard	78.0	.....	64.9	.....	54.8	.....
Jacksonville	78.6	+ 9.0	66.6	+ 5.3	56.1	+ 0.9
Jacksonville (2) .....	.....	.....	.....	.....	55.0	.....
Jasper .....	.....	.....	.....	.....	54.2	+ 0.9
Johnstown .....	.....	.....	.....	.....	.....	.....
Lake City	78.6 ¹	+ 8.8	65.6	+ 4.0	54.6	— 1.4
Live Oak .....	.....	.....	.....	.....	.....	.....
Macclenny .....	.....	.....	.....	.....	.....	.....
Madison	79.7	+ 9.6	66.4 ²	+ 5.6	55.8 ²	+ 1.5
Middleburg	77.6 ⁴	+ 7.3	65.5 ³	+ 4.6	54.7 ⁴	+ 0.5
Monticello	79.0	+ 9.4	65.2	+ 5.2	54.2	+ 1.2
Mount Pleasant	77.8	+ 8.9	64.4	+ 5.1	54.9 ⁴	+ 1.5
Old Town	78.6	.....	66.8	.....	56.2	.....
Quincy	78.4	.....	64.8	.....	54.0	.....
St. Augustine	79.0	+ 6.6	69.6	+ 5.4	59.4	+ 1.8
Satsuma Heights	80.3	+ 8.6	68.0 ⁴	+ 5.7	60.1 ⁴	+ 3.1
Switzerland	77.2 ²	+ 6.7	.....	.....	.....	.....
Tallahassee	77.6	+ 9.2	64.4	+ 4.9	53.8	+ 0.9
Central Division.						
Bartow	79.4	+ 5.4	69.6	+ 3.1	62.3	+ 0.9
Brooksville	78.6	+ 5.3	68.2	+ 2.6	59.2	— 0.4
Clermont	81.0	+ 6.1	71.0	+ 3.5	63.3	+ 2.2
DeLand	79.0	+ 7.0	68.1	+ 3.7	60.0	+ 1.3
Eustis	79.6	+ 6.3	69.3	+ 3.7	60.7	+ 0.8
Fellsmere	78.6	.....	70.4	.....	64.6	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	October.		November.		December.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Fort Meade	80.0	+ 5.9	69.5	+ 2.6	62.6	+ 2.8
Fort Pierce	81.2	+ 4.9	72.6	+ 3.2	67.3	+ 2.9
Inverness	79.4	+ 6.8	68.5	+ 5.4	58.8	+ 2.0
Kissimmee .....	.....	.....	.....	.....	61.8	+ 0.6
Lakeland	78.8	.....	68.6	.....	63.0	.....
Lucerne Park .....	.....	.....	67.4 ^a	.....	.....	.....
Malabar	81.9	+ 6.4	72.2	+ 3.5	66.0	+ 2.8
McDonald	78.8	+ 5.9	68.8	+ 3.2	60.8	+ 1.6
Merritts Island	79.6	+ 4.1	71.2	+ 2.8	64.7	+ 1.7
New Smyrna	81.6	+ 8.5	69.8	+ 4.6	60.5	+ 1.9
Ocala	77.3	+ 5.3	66.8	+ 3.0	57.6	0.0
Okeechobee	79.4	.....	.....	.....	.....	.....
Orange City	78.6	+ 5.3	68.2	+ 3.5	61.1	+ 1.8
Orland	80.4	+ 6.7	70.4	+ 3.9	63.4	+ 2.8
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	79.5	.....	70.6	.....	62.2	.....
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell .....	.....	.....	.....	.....	.....	.....
St. Cloud .....	.....	.....	68.9 ^a	.....	63.0	.....
St. Leo	78.0	+ 4.6	68.4	+ 2.3	60.2	+ 0.3
St. Petersburg	81.4	.....	72.2	.....	64.6	.....
Sanford	79.2	+ 5.5	68.8	+ 3.5	61.0	+ 1.4
Tampa	80.4	+ 6.6	71.2	+ 4.4	63.0	+ 1.8
Tarpon Springs	81.2	+ 7.9	71.2	+ 5.5	61.7	+ 1.8
Titusville	80.1	+ 6.4	69.6	+ 3.2	62.4	+ 0.8
Southern Division.						
Arcadia	80.0	+ 4.9	72.2	+ 4.5	63.2	+ 0.1
Avon Park	79.7	+ 4.8	71.2	+ 3.3	65.4	+ 2.6
Boca Grande .....	.....	.....	.....	.....	66.5	.....
Bradentown	79.2	+ 5.1	70.2	+ 3.1	62.4	+ 0.8
Davie	77.5	.....	71.1	.....	65.6	.....
Fort Lauderdale	80.9	.....	74.2	.....	69.3	.....
Fort Myers	80.4	+ 5.1	72.2	+ 2.6	66.0	+ 1.7
Griffin	77.6	.....	70.8	.....	65.8	.....
Homestead	78.6	.....	72.1	.....	66.4	.....
Hypoluxo	80.6	+ 3.1	73.4	+ 1.0	69.0	+ 0.7
Key West	81.6	+ 2.9	76.0	+ 1.7	72.0	+ 1.9
Long Key	82.2	.....	75.7	.....	71.5	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1919, with
Departures from the Normal.

STATIONS.	October.		November.		December.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Miami (1)	80.1	+ 2.3	73.4	+ 1.5	68.8	+ 0.8
Miami (2)	82.0	.....	73.5	.....	69.0	.....
Moore Haven	79.0	.....	69.6	.....	.....	.....
Punta Gorda	79.8 ²	.....	70.9 ¹	.....	64.5 ²	.....
Ritta	80.0 ²	.....	70.9 ²	.....	65.2 ¹	.....
Sand Key	79.7	.....	75.6	.....	71.6	.....
Western Division.						
Apalachicola	79.6	+ 8.5	66.9	+ 4.8	55.3	+ 0.0
Bonifay .....	.....	.....	63.7	+ 4.3	53.0	+ 1.0
DeFuniak Springs	74.0	+ 5.5	63.0	+ 4.0	51.6	- 0.5
Garniers (near)	76.9	.....	64.6	.....	53.4	.....
Marlanna	79.0	+11.0	63.4 ²	+ 5.0	53.6	+ 0.4
Molino .....	.....	.....	.....	.....	.....	.....
Pensacola	77.4	+ 8.0	64.5	+ 4.9	55.3	+ 1.4
St. Andrews	79.4	+ 9.4	67.9	+ 8.1	55.8	+ 2.6
Wausau	78.4	+10.0	63.8	+ 5.2	55.2	+ 0.4

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	Annual.	
	Temperature.	Departure.
Northern Division.		
Archer		
Bristol		
Camp Johnson		
Carrabelle		
Cedar Keys	72.2	+ 1.9
Crescent City	70.8	+ 0.5
Federal Point	71.4	+ 1.8
Fenholloway		
Fernandina	69.4	+ 0.9
Gainesville	70.1	+ 0.4
Hilliard	69.3	
Jacksonville	69.8	+ 1.6
Jacksonville (2)		
Jasper		
Johnstown		
Lake City	69.7	+ 0.7
Live Oak		
Maccleenny		
Madison	69.5	+ 0.9
Middleburg	69.6	+ 1.3
Monticello		
Mount Pleasant	63.3	+ 0.7
Old Town	70.1	
Quincy		
St. Augustine	70.6	+ 1.1
Satsuma Heights	71.7	+ 1.9
Switzerland		
Tallahassee	68.6	+ 1.4
Central Division.		
Bartow	72.5	+ 0.5
Brooksville	70.7	- 0.3
Clermont	73.5	+ 0.8
DeLand	72.1	+ 2.1
Eustis	72.5	+ 0.9
Fellsmere	72.9	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal.

STATIONS.	Annual.	
	Temperature.	Departure.
Fort Meade	72.6	+ 1.1
Fort Pierce	74.6	+ 1.8
Inverness	71.5	+ 1.6
Kissimmee		
Lakeland	72.4	
Lucerne Park		
Malabar		
McDonald	71.8	+ 0.7
Merritts Island	72.5	0.0
New Smyrna		
Ocala	69.8	— 0.4
Okeechobee		
Orange City		
Orlando	73.0	+ 1.2
Oxford		
Pinellas Park	72.5	
Plant City		
Rockwell		
St. Cloud		
St. Leo	70.8	— 0.8
St. Petersburg	73.8	
Sanford	71.5	+ 0.9
Tampa	73.1	+ 0.9
Tarpon Springs	72.7	+ 1.7
Titusville	72.2	+ 0.9
Southern Division.		
Arcadia		
Avon Park	73.0	+ 0.4
Boca Grande		
Bradentown	72.4	+ 0.8
Davie		
Fort Lauderdale	75.1	
Fort Myers	74.1	+ 1.0
Griffin	72.9	
Homestead	74.2	
Hypoluxo	74.6	+ 0.1
Key West	77.3	+ 0.4
Long Key	77.5	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1919, with
Departures from the Normal—Continued.

STATIONS.	Annual.	
	Temperature.	Departure.
Miami (1)	74.8	— 0.6
Miami (2)	75.4	.....
Moore Haven .....	.....	.....
Punta Gorda .....	.....	.....
Ritta .....	.....	.....
Sand Key .....	.....	.....
Western Division.		
Apalachicola	69.4	+ 0.4
Bonifay .....	.....	.....
DeFuniak Springs .....	.....	.....
Garniers (near)	67.7	.....
Mariana	68.4	+ 1.3
Molino .....	.....	.....
Pensacola	67.9	+ 0.1
St. Andrews .....	.....	.....
Wausau	63.8	+ 0.8

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	January.		February.		March.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Northern Division.						
Archer						
Bristol					81	22
Camp Johnston	77	1				
Carrabelle	70	22	73	23	81	22
Cedar Keys	76	22	81	24	81	4†
Crescent City	83	26	84	22	85	5
Federal Point	80	1	82	28	84	22†
Fennolloway	76	1	80	24	84	16†
Fernandina	76	1	77	22†	81	6
Gainesville	80	23	80	24	83	5
Hilliard	78	21	78	28	89	6
Jacksonville	75	21	76	25	81	5
Jacksonville (2)	79	1				
Jasper	80	1	79	24	85	16
Johnstown	78	1	80	28	82	5
Lake City	78	1	81	28	88	5
Live Oak						
Macclenny	83	2	81	28	83	25
Madison	76	1†	75	12†	83	16
Middleburg	77	23	80	22	83	5
Monticello						
Mount Pleasant	72	1†	73	12	82	22
Old Town	78	1†	82	24	85	15†
Quincy	75	1	74	28	83	22
St. Augustine	80	23	80	22	80	6
Satsuma Heights	79	23†	82	22†	84	5
Switzerland	78	23†	83	22†	84	5
Tallahassee	72	13†	74	12	83	22
Central Division.						
Bartow	84	25	85	22	87	5†
Brooksville	80	25	84	24	84	26
Clermont	80	21†	85	24	85	8
DeLand	82	26	85	22	87	5
Eustis	82	23	84	22	86	5
Fellsmere	83	23†	84	22†	87	6†
Fort Meade	83	23	85	22	86	11
Fort Pierce	84	25	88	25	89	11

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	January.		February.		March.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Inverness	82	23	82	22†	86	5
Kissimmee	80	23†	83	22†	85	9
Lakeland	84	24	84	22†	88	6
Lucerne Park	81	23†	84	22†	86	9†
Malabar	84	25	88	22	89	9
McDonald	82	23†	84	24	86	5†
Merritts Island	78	2†	78	22	83	9
New Smyrna	83	16	85	21	83	5
Ocala	79	23	81	22†	83	5
Okeechobee	87	16	85	22	87	6†
Orange City	81	23	86	22	85	8
Orlando	83	26	86	22	87	9
Oxford						
Pinellas Park	79	2†	83	24	85	7
Plant City	84	24	85	24		
Rockwell	78	1†				
St. Cloud	82	23†	84	22†	87	10
St. Leo	81	25	82	24	82	5
St. Petersburg	79	2	81	24	82	8
Sanford	84	26	85	22	86	8
Tampa	78	23	83	24	82	8
Tarpon Springs	79	1†	85	24	87	17
Titusville	82	26	86	22	86	9
Southern Division.						
Arcadia					86	9†
Avon Park	81	23†	83	22	87	11
Boca Grande	81	26	82	25	82	17
Bradentown	80	2†	85	24	86	7
Davie	85	24	84	22†	89	9
Fort Lauderdale	85	24	87	4	86	3†
Fort Myers	84	2	88	24	86	5†
Griffin	84	24	85	22	89	9
Homestead	88	25†	87	3	89	2†
Hypoluxo	84	24†	87	23	89	3
Key West	80	3	83	28	84	9
Long Key	80	24	82	23	85	9†
Miami (1)	78	24	82	3	82	9
Miami (2)	82	22	84	3	84	7†
Moore Haven	86	24	87	22	90	6†

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	January.		February.		March.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Punta Gorda	85	23	88	22	88	6†
Ritta						
Sand Key						
Western Division.						
Apalachicola	71	24	73	23	82	23
Bonifay	72	1†	76	22	82	22
DeFuniak Springs						
Garniers (near)	70	1†	73	22	85	22
Marianna	78	1	77	22	82	23
Molino	72	22				
Pensacola	69	1	74	22	80	22
St. Andrews			70	12†	81	23
Wausau	77	1	75	22	82	21†

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	April.		May.		June.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Northern Division.						
Archer					95	17†
Bristol	91	24	94	18		
Camp Johnston						
Carrabelle	83	24	86	10		
Cedar Keys	89	25	89	3	92	6†
Crescent City	88	15†	95	25	95	22
Federal Point	90	29	95	26	96	17†
Fenholloway	91	24	93	18†	95	7†
Fernandina	89	24	90	25	94	22
Gainesville	89	24†	93	25†	94	22
Hilliard	89	23	94	25	96	22
Jacksonville	87	24	90	25	93	22
Jacksonville (2)						
Jasper					100	22†
Johnston	89	25	94	25†	95	11
Lake City	91	24	97	25†	99	23†
Live Oak					98	22†
Macclenny	88	15†			96	25†
Madison	90	24	93	25†	95	23
Middleburg	92	24	93	26	97	23
Monticello					94	22†
Mount Pleasant	91	24	91	16†	94	7†
Old Town	90	22†	92	4	96	7
Quincy	91	24			97	26
St. Augustine	89	24	88	1†	92	22
Satsuma Heights	91	30	98	25	97	24
Switzerland	87	24	93	25	93	22
Tallahassee	89	24	89	25	94	23†
Central Division.						
Bartow	91	15	95	24	94	6†
Brooksville	92	25	93	24†	93	6†
Clermont	89	24†	93	25	93	16†
DeLand	94	24	98	25	97	22†
Eustis	92	24†	98	25	96	16†
Fellsmere	91	16	92	13†	92	5†
Fort Meade	94	25	97	24	95	5

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	April.		May.		June.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Fort Pierce	93	16	94	20	95	29
Inverness	91	25	92	24†	93	22†
Kissimmee	92	28	95	25	95	16†
Lakeland	91	8†	92	26	90	5
Lucerne Park	93	26	94	24†	95	6
Malabar	93	16	94	28	94	24
McDonald	92	25	96	24	95	22
Merritts Island	85	16	86	20†	86	6†
New Smyrna	91	23	89	13†	90	15†
Ocala	87	25†	92	24†	95	23
Okeechobee	90	16	92	13†	91	24†
Orange City	93	24	96	25†	98	6†
Orlando	94	25	96	6†	97	22
Oxford						
Pinellas Park	87	25	91	24†	93	17
Plant City						
Rockwell						
St. Cloud			93	25	96	16†
St. Leo	90	25	91	24	90	6†
St. Petersburg	87	26	90	25	92	17
Sanford	90	24	95	25	96	22
Tampa	88	25	92	25	93	17
Tarpon Springs	90	8	94	25	93	20
Titusville	91	24	92	13	92	27
Southern Division.						
Arcadia			96	24†	95	6
Avon Park	87	30	93	24†	92	30
Boca Grande			91	30†	90	10
Bradentown	88	26	94	25	93	17
Davie	90	26	90	13	92	29
Fort Lauderdale	90	25†	90	12	92	29
Fort Myers	90	26	97	24	92	16†
Griffin	90	26	91	13	92	29
Homestead	93	26	94	20	93	29
Hypoluxo	91	25	92	19	93	28
Key West	86	16	88	28	89	30
Long Key	90	12	91	19†	91	8†
Miami (1)	84	25	88	18	89	28
Miami (2)	87	25	92	18	92	28

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	April.		May.		June.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Moore Haven	91	16	92	1†	93	30
Punta Gorda	90	13†	.....	.....	.....	.....
Ritta	92	17	94	19	96	30
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	84	25	87	17	94	6
Bonifay	90	8	89	17	95	16†
DeFuniak Springs .....	.....	.....	.....	.....	95	8
Griners (near)	92	25	86	18	94	28
Marianna	92	24	93	3†	97	16†
Molino .....	.....	.....	92	17	97	16
Pensacola	87	24	82	14	89	7
St. Andrews .....	.....	.....	.....	.....	.....	.....
Wausau	92	8	92	3	97	22

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	July.		August.		September.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Northern Division.						
Archer	96	13†	96	3	95	23
Bristol						
Camp Johnston						
Carrabelle			98	2	91	11†
CedarKeys	93	14†	94	6	95	9
Cedar Keys	93	14†	94	6	95	9
Crescent City	97	7†	97	5†	91	2†
Federal Point	98	7†	98	2†	96	23
Fenholloway	97	14				
Fernandina	95	12†	97	2	93	12†
Gainesville	96	13	96	6	92	18†
Hilliard	97	6†	97	4	95	12
Jacksonville	94	13	94	21	91	12
Jacksonville (2)						
Jasper						
Johnstown	95	13†	95	5†	95	7
Lake City	98	10†	98	6	96	12†
Live Oak	100	14				
Maccleenny						
Madison	94	14	95	23†	94	11†
Middleburg	98	13	97	2†	95	23
Monticello	94	6†	95	29	94	18†
Mount Pleasant	98	7	96	2	95	17†
Old Town	95	13†	95	3	96	23
Quincy	98	7	96	1	95	17
St. Augustine	95	30	97	2†	92	12
Satsuma Heights	99	7	98	6	97	11
Switzerland	93	7†	95	6	91	23
Tallahassee	94	8†	95	2†	92	11†
Central Division.						
Bartow	95	7†	97	6†	94	5†
Brooksville	95	14†	95	21†	93	5†
Clermont	95	7†	97	6†	96	24
DeLand	100	8	99	1†	96	11†
Eustis	100	9	101	6	95	5†
Fellsmere	94	7†	94	1†	92	1†

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	July.		August.		September.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Fort Meade	96	8	96	5†	94	15
Fort Pierce	94	7†	98	3	92	1†
Inverness	94	8†	94	23	92	12
Kissimmee	92	7†	93	8†	92	15†
Lakeland	96	7†				
Lucerne Park	99	12			96	24
Malabar	96	7†	97	6†	94	5†
McDonald	93	31	94	2†	89	1†
Merritts Island	95	12	99	2		
New Smyrna	98	14	97	22	93	11†
Ocala	96	31	96	5	93	11†
Okeechobee	97	31	99	6	96	22†
Orange City	97	31	98	5	98	22†
Orland	97	9			92	23
Oxford	94	14	93	21	92	6†
Pinellas Park						
Plant City						
Rockwell	96	6†	95	5	92	17†
St. Cloud	93	14	92	5†	90	5
St. Leo	94	15	94	10	92	4†
St. Petersburg	95	7†	97	6	95	22
Sanford	94	15	95	21	93	6
Tampa	96	27	97	22	95	6†
Tarpon Springs	96	8†	98	1	94	24
Titusville						
Southern Division.						
Arcadia	98	8	98	3†	93	1†
Avon Park	96	7	95	6	93	16
Boca Grande	95	14†	95	16†		
Bradentown	93	9†	97	21†	93	23
Davie	93	8	94	4	90	4†
Fort Lauderdale	92	8†	95	2	93	26
Fort Myers	94	24	95	20	93	3†
Griffin	92	12	94	1	91	25
Homestead	96	12	96	19	92	1†
Hypoluxo	90	9†	92	4†	96	26
Key West	89	4	92	28	90	25
Long Key	93	8†	95	26	94	26
Miami (1)	89	12	92	2	90	26
Miami (2)	91	5†	94	5	95	26

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	July.		August.		September.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Moore Haven	92	1†	95	6†	92	1†
Punta Gorda	95	6†	94	5†	94	3†
Ritta	92	9†	96	16	91	1
Sand Key					88	27
Western Division.						
Apalachicola	93	7	95	2	92	17
Bonifay	96	7	96	6†	97	18
DeFuniak Springs	96	6	98	7	94	7
Garniers (near)	99	7	96	2	98	23
Marianna	98	7†	99	8	99	18
Molino	96	7				
Pensacola	93	7	93	2	89	10
St. Andrews	95	4†	94	2	93	10†
Wausau	97	8†	97	6†	98	11†

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	October.		November.		December.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Northern Division.						
Archer	95	5†	88	1	.....	.....
Bristol .....	.....	.....	.....	.....	.....	.....
Camp Johnston .....	.....	.....	.....	.....	.....	.....
Carrabelle	91	7	85	1	75	9
Cedar Keys	93	6†	89	11†	86	13
Crescent City	90	24	83	1	85	9†
Federal Point	96	7†	90	1	82	9
Fennolloway .....	.....	.....	.....	.....	81	8†
Fernandina	92	7	89	1	81	7†
Gainesville	93	7	88	1	84	9
Hilliard	95	3†	89	1	85	9
Jacksonville	90	6	85	1	80	9
Jacksonville (2) .....	.....	.....	.....	.....	83	9
Jasper .....	.....	.....	.....	.....	80	8†
Johnstown	93	4†	.....	.....	.....	.....
Lake City	96	5†	90	1	84	9
Live Oak .....	.....	.....	.....	.....	.....	.....
Macclenny .....	.....	.....	.....	.....	.....	.....
Madison	96	13†	88	1	82	9
Middleburg	94	7	89	1	81	9
Monticello	95	6†	87	1	80	8
Mount Pleasant	95	7	87	1	80	8
Old Town	94	6†	89	1	82	8†
Quincy	96	7	89	10	79	7†
St. Augustine	91	4†	88	1	84	10
Satsuma Heights	92	2†	88	1	83	9†
Switzerland	92	3†	.....	.....	.....	.....
Tallahassee	91	8	83 ¹	2	78	7
Central Division.						
Bartow	97	2†	91	1	87	10
Brooksville	95	5†	89	1	87	10
Clermont	97	2	92	1	87	10
DeLand	98	6	90	1	83	8†
Eustis	94	7†	91	1	87	1†
Fellsmere	91	18	88	1	84	8

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	October.		November.		December.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Fort Meade	96	2	91	1	88	11†
Fort Pierce	92	4	88	1	84	14
Inverness	93	7	90	1	84	8
Kissimmee						
Lakeland	92	2†	89	1	86	10
Lucerne Park			85 ¹⁰	11		
Malabar ..	96	10	87	1†	85	14†
McDonald	95	6	90	1	88	10
Merritts Island	88	10	86	1	81	8†
New Smyrna	95	1†	90	1	83	8
Ocala	95	6†	88	1	83	8†
Okeechobee	93	2†				
Orange City	96	4†	91	1	87	10
Orlando	98	3†	92	1	90	10
Oxford						
Pinellas Park	92	2†	87	1	85	10†
Plant City						
Rockwell						
St. Cloud			85 ¹⁰	28†	86	2
St. Leo	91	2	86	1	83	10†
St. Petersburg	92	2†	86	1	85	4
Sanford	95	3†	90	1	87	10
Tampa	93	2	86	1	84	10
Tarpon Springs	96	3	90	1	86	13
Titusville	92	9	86	1	83	10
Southern Division.						
Arcadia	94	2†	87	1	83	1†
Avon Park	96	3	91	1	85	11
Boca Grande					85	1†
Bradentown	94	4†	88	1	85	10
Davie	88	1†	89	2	84	2
Fort Lauderdale	92	4†	90	2†	90	8
Fort Myers	94	3	88	1	86	2
Griffin	89	1†	88	2	85	14
Homestead	95	1	92	4†	87	14
Hypoluxo	89	2†	92	2†	86	14
Key West	89	1	85	1	83	14
Long Key	91	1†	89	2	85	14
Miami (1)	87	2	85	2	80	1

CLIMATOLOGICAL DATA—Continued.

Monthly Maximum Temperatures for the Year 1919, with Dates.

STATIONS.	October.		November.		December.	
	Maximum.	Date.	Maximum.	Date.	Maximum.	Date.
Miami (2)	92	10	87	1 ⁺	86	10
Moore Haven	93	3	90	1 ⁺	85	21
Punta Gorda	94	3	87	3	84	1 ⁺
Ritta	93	2	88	2 ⁺	85	10
Sand Key	84	1	84	30	79	14
Western Division.						
Apalachicola	95	7	86	1	74	9
Bonifay			82	1	79	7 ⁺
DeFuniak Springs	88	1 ⁺	83	7	80	8
Garniers (near)	94	7	84	1	79	7
Marianna	97	8	86	1	85	8
Molino						
Pensacola	85	1	80	1	74	8
St. Andrews	92	5	85	1 ⁺	85	3
Wausau	96	8	85	1 ⁺	81	8

CLIMATOLOGICAL DATA: FLORIDA SECTION.

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	January		February		March	
	Minimum	Date	Minimum	Date	Minimum	Date
Northern Division						
Archer						
Bristol					36	31
Camp Johnston	24	4				
Carrabelle	23	5	27	11	40	29
Cedar Keys	25	4	34	11	51	19†
Crescent City	29	4†	29	11	38	29
Federal Point	28	4	34	10	41	30
Fenholloway	20	5†	25	11	37	29
Fernandina	23	4	31	10	45	29
Gainesville	24	4†	29	10†	41	29†
Hilliard	21	4	27	11	42	24†
Jacksonville	23	4	32	10	46	29
Jacksonville (2)	25	4†				
Jasper	22	4†	25	10	42*	24
Johnstown	23	4	29	11	39	29
Lake City	20	4	26	11	40	30
Live Oak	21	4	26	11		
Macclenny	22	6	25	11	35	30†
Madison	19	4	29	11†	41	29
Middleburg	22	6	26	11	36	29
Monticello						
Mount Pleasant	17	4†	26	11	37	29
Old Town	21	6	25	11	36	29
Quincy	17	5	25	11	37	29
St. Augustine	28	4	33	10†	44	29†
Satsuma Heights	26	5	32	10	44	24
Switzerland	26	5†	31	11	40	30
Tallahassee	19	4	29	11	42	29
Central Division.						
Bartow	28	6	30	11	39	29
Brooksville	25	6	27	11	37	29
Clermont	31	6	35	10†	48	29
DeLand	26	6	28	11	37	29
Eustis	27	6	30	11	41	29
Fellsmere	32	6	33	11	43	29
Fort Meade	27	6	29	11	40	29
Fort Pierce	34	6	40	10†	51	29

CLIMATOLOGICAL DATA: FLORIDA SECTION.—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	January		February		March	
	Minimum	Date	Minimum	Date	Minimum	Date
Inverness	27	6	29	11	44z	20
Kissimmee	33	4	33	11	45	29
Lakeland	32	4†	37	10†	49	29
Lucerne Park	31	4†	34	11	44	29
Malabar	33	6	38	10†	46	20
McDonald	27	6	30	11	41	29
Merritts Island	37	6	40	11	51	20†
New Smyrna	31	5†	34	10	42	29†
Ocala	25	4†	27	11	38	29
Okeechobee	30	6	32	11	42	29
Orange City	25	6	24	11	34	29
Orlando	28	6	33	11	40	29
Oxford						
Pinellas Park	33	6	33	11	44	29
Plant City	28	6	30	11		
Rockwell	27	4†				
St. Cloud			37	10	47	29
St. Leo	29	5†	33	10	45	29
St. Petersburg	35	5†	39	11	50	29
Sanford	30	4†	32	11	38	29
Tampa	33	6	38	11	49	29
Tarpon Springs	28	6	30	11†	43	29
Titusville	31	6	35	11	41	29
Southern Division.						
Arcadia						
Avon Park	34	6	36	11	47	20
Boca Grande	39	6	42	11	54	29
Bradentown	34	6	31	11	40	29
Davie						
Fort Lauderdale	38	6	36	12†	53	21†
Fort Myers	36	5	38	11	48	29
Griffin	35	6	34	12	47	21
Homestead	38	5	35	12	49	30
Hypoluxo	38	5	33	12	52	20†
Key West	52	6	55	11	63	31
Long Key	47	6	50	11	60	23†
Miami (1)	37	5	41	17	51	21
Miami (2)	36	5	38	17	50	21
Moore Haven			32	17	44	21†
Punta Gorda					44	29

CLIMATOLOGICAL DATA: FLORIDA SECTION.—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	January		February		March	
	Minimum	Date	Minimum	Date	Minimum	Date
Ritta	39	5	36	11	51	31
Sand Key						
Western Division.						
Apalachicola	22	4	32	11	44	29
Bonifay	17	4	29	10†	41	29
DeFuniak Springs						
Garniers (near)	14	4	26	16	38†	19
Marianna	18	4	28	11	40	31
Molino	16	4				
Pensacola	17	4	31	10	44	1
St. Andrews			30	10†	45z	19
Wausau	18	4†	27	11	38	29

CLIMATOLOGICAL DATA: FLORIDA SECTION.—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	April		May		June	
	Minimum	Date	Minimum	Date	Minimum	Date
Northern Division						
Archer					60	14†
Bristol	32	2	49	23		
Camp Johnston						
Carrabelle	36	2	52	17	65	15
Cedar Keys	44	2	63	21	68	14
Crescent City	33	2	54	23	59	15
Federal Point	36	2	57	23	59	15
Fenholloway	33	2	49	23	60	15
Fernandina	40	2	58	23	64	15
Gainesville	32	2	53	23	60	14†
Hilliard	36	2	55	23	62	15
Jacksonville	42	2	60	23	66	15
Jacksonville (2)						
Jasper						
Johnstown	34	2	49	23	63**	23†
Lake City	35	2	50	23	59	15
Live Oak					60	15
Maccleenny	32	2			58	15
Madison	37	1†	55	23	64	15
Middleburg	31	2	51	23	58	15
Monticello						
Mount Pleasant	34	2	51	22	59	15
Old Town	30	2	52	23	57	15
Quincy	33	2	49	23	62	14
St. Augustine	37	2	57	23	61	15
Satsuma Heights	35	2	56	23	62	16
Switzerland	37	2	55	23	60	15
Tallahassee	38	1	54	23	64	14
Central Division.						
Bartow	37	2	52	22	61	15
Brooksville	32	2	50	23	58	15
Clermont	42	2	63	22†	66	15
DeLand	31	2	52	23	58	15
Eustis	35	2	56	23	60	15
Fellsmere	41	2	54	22	61	15
Fort Meade	37	2	51	22	62	15
Fort Pierce	47	2	58	22	66	15

CLIMATOLOGICAL DATA: FLORIDA SECTION—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	April		May		June	
	Minimum	Date	Minimum	Date	Minimum	Date
Inverness	51zz	27	55	23	68†	1
Kissimmee	42	2	59	21†	65	16
Lakeland	43	2	59	22	63	2
Lucerne Park	42	2	59	22	62	20
Malabar	44	2	56	22	65	16
McDonald	36	2	55	22	60	15†
Merritts Island	48	3	59	23	68	15
New Smyrna	39	2†	56	23	62	15
Ocala	30	2	52	22†	58	15
Okeechobee	42	2	56	22	64	17
Orange City .....	.....	.....	50	23	56	15
Orlando	37	2	55	22†	61	15
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas	40	2	56	22†	63	15
Plant City .....	.....	.....	.....	.....	.....	.....
Rockwell	35	2	.....	.....	62*	16†
St. Cloud .....	.....	.....	59	22	67	16
St. Leo	41	2	58	23	62	15
St. Petersburg	48	2	64	23	66	25
Sanford	34	2	54	23	64	21
Tampa	46	2	64	22	66	15
Tarpon Springs	41	2	60	23	62	15
Titusville	39	2	55	23	62	15
Southern Division						
Arcadia	41	2*	56	22	69	9
Avon Park	45	2	57	22	60	3
Boca Grande	50	2	60	20†	70	1†
Bradentown	41	2	54	22	60	15
Davie .....	.....	.....	.....	.....	.....	.....
Fort Lauderdale	54	1†	58	22	66	15†
Fort Myers	49	2	56	22	65	15
Griffin	47	22	54	22	61	16
Homestead	47	1	61	12†	61	16
Hypoluxo	52	2†	56	22†	62	23
Key West	63	3	68	30	71	19
Long Key	61	2	70	21†	72	13†
Miami (1)	56	2	64	11	68	16
Miami (2)	53	2	61	22	62	16
Moore Haven	42	6	52	22	62	15
Punta Gorda .....	.....	.....	.....	.....	.....	.....
Ritta .....	.....	.....	54	22	65	16
Sand Key .....	.....	.....	.....	.....	.....	.....

CLIMATOLOGICAL DATA: FLORIDA SECTION—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	April		May		June	
	Minimum	Date	Minimum	Date	Minimum	Date
Western Division						
Apalachicola	42	1	54	21	66	15
Bonifay	35	2	56z	12	63	15
DeFuniak Springs						
Garniers (near)	32	2	46	22	61	15
Marianna	37	1	51	22	59	15
Molino			47	21	61	13
Pensacola	41	1	55	21	68	29
St. Andrews						
Wausau	32	2	50	22	60	15

CLIMATOLOGICAL DATA: FLORIDA SECTION—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	July		August		September	
	Minimum	Date	Minimum	Date	Minimum	Date
Northern Division.						
Archer	66	29	68	30	57	29
Bristol						
Camp Johnston						
Carrabelle	70	1†	67	27	59	29
Cedar Keys	69	17	69	31	63	29
Crescent City	67	13	69	24†	64	27†
Federal Point	69	2†	67	27	65	26
Fenholloway	67	25				
Fernandina	70	17†	67	13	64	26
Gainesville	66	29	69	13†	61	29
Hilliard	64	2	62	28	60	26†
Jacksonville	70	1	68	17	64	29
Jacksonville (2)						
Jasper						
Johnstown	67	2†	67	13	60	30
Lake City	66	2†	67	13	59	27†
Live Oak	67	2†				
Macclenny						
Madison	66	2	66	13	59	29
Middleburg	67	29	67	13	59	27
Monticello	64	2	66	13	58	29
Mount Pleasant	64	2	63	27	50	29
Old Town	66	29	69	5†	59	27†
Quincy	62	18	62	10†	54	29
St. Augustine	70	29	69	31	62	28†
Satsuma Heights	69	29	68	17†	64	29
Switzerland	68	29	68	28	64	27
Tallahassee	66	1†	67	13	59	29
Central Division						
Bartow	67	25	68	20†	63	27
Brooksville	66	29	68	20†	62	27†
Clermont	71	3†	69	12	68	27†
DeLand	67	3	68	29	63	27
Eustis	68	3†	70	20†	65	29
Fellsmere	68	3	68	19†	69	3†
Fort Meade	67	30	69	21†	65	27†
Fort Pierce	70	3	71	8†	70	30
Inverness	68	6†	69	30	64	29

CLIMATOLOGICAL DATA: FLORIDA SECTION—Continued.

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	July		August		September	
	Minimum	Date	Minimum	Date	Minimum	Date
Kissimmee						
Lakeland	68	3†	70	27†	64	29
Lucerne Park	69	29				
Malabar	69	2				
McDonald	67	3†	68	12	65	29
Merritts Island	71	2†	68	14†	68	3†
New Smyrna	69	18	69	29†		
Ocala	65	29	69	13†	62	30
Okeechobee	69	9†	69	1	68	7†
Orange City	66	3	68	20†	62	27
Orlando	67	4	67	29	63	27
Oxford						
Pinellas Park	68	7†	70	31	67	27†
Plant City						
Rockwell						
St. Cloud	67	23	69	14	68	29
St. Leo	67	28†	67	13	64	29
St. Petersburg	71	20†	70	31	68	29
Sanford	65	3	67	20	64	27
Tampa	67	29	70	31	67	29
Tarpon Springs	67	28	71	31	64	29
Titusville	69	19	68	24	66	27
Southern Division						
Arcadia	69	30	70	31	67	27†
Avon Park	67	28†	68	14	68	27
Boca Grande	70	20†	70	14†		
Bradentown	65	29	69	20	67	2†
Davie	67	2†	66	25	67	24†
Fort Lauderdale	69	31	69	13†	63	30
Fort Myers	69	30	71	30	66	30
Griffin	67	2†	68	24	68	1†
Homestead	67	1†	67	1	62	29†
Hypoluxo	69	22	67	1†	61	10
Key West	70	25	75	24	73	10
Long Key	73	16†	72	30	71	10†
Miami (1)	71	21	72	11	69	1
Miami (2)	70	2†	70	1	64	30
Moore Haven	66	2†	68	29†	65	30
Punta Gorda	69	30	70	10†	68	27†
Ritta	66	28	69	7	64	30
Sand Key					72	1

CLIMATOLOGICAL DATA: FLORIDA SECTION—Continued.

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	July		August		September	
	Minimum	Date	Minimum	Date	Minimum	Date
Western Division						
Apalachicola	69	1	68	27	61	30
Bonifay	63	2	69	13	57	29†
DeFuniak Springs ...	61	1	60	29	50	30
Garniers (near)	65	2	64	28	50	30
Marianna	61	2	63	27	56	29
Molino	66	4	.....	.....	.....	.....
Pensacola	70	4	69	30	60	30
St. Andrews	68	5	68	27	60	29
Wausau	64	2	65	26†	52	29

CLIMATOLOGICAL DATA: FLORIDA SECTION—Continued.

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	October		November		December	
	Minimum	Date	Minimum	Date	Minimum	Date
Northern Division						
Archer	63	27†	42	19	.....	.....
Bristol .....	.....	.....	.....	.....	.....	.....
Camp Johnston .....	.....	.....	.....	.....	.....	.....
Carrabelle	67	3	43	15	28	16
Cedar Keys	66	20	49	19	33	15†
Crescent City	66	13†	44	19	32	18
Federal Point	65	12	49	24	38	18†
Fenholloway .....	.....	.....	.....	.....	24	17
Fernandina	64	19	48	19	35	26†
Gainesville	64	20	44	19	31	17†
Hilliard	60	24	40	15	28	16†
Jacksonville	65	19	46	15	34	16
Jacksonville (2) .....	.....	.....	.....	.....	29	16
Jasper .....	.....	.....	.....	.....	24	17
Johnstown .....	.....	.....	.....	.....	.....	.....
Lake City	62	19†	40	15	27	17
Live Oak .....	.....	.....	.....	.....	.....	.....
Macclenny .....	.....	.....	.....	.....	.....	.....
Madison	62	20	41	15	28	16
Middleburg	62	29	40	20	30	17†
Monticello	60	20	38	15	28	16
Mount Pleasant	58	20	36	15	29*	23†
Old Town	61	27	37	19	24	17
Quincy	58	20	34	15†	25	16
St. Augustine	68	1†	50	19	37	16
Satsuma Heights	69	13†	49	19	34	16
Switzerland	64	28	46	20	35	26
Tallahassee	62	20	40	15	29	16
Central Division						
Bartow	62	27	43	19	35	18†
Brooksville	59	27	42	19	28	18
Clermont	68	27	50	19	40	16
DeLand	62	26	43	19	31	18
Eustis	64	27	48	25	34	18
Fellsmere	63	27	45	19	39	30
Fort Meade	62	27	44	19	33	18
Fort Pierce	70	25	50	19	42	30
Inverness	65	27	46	19†	34	18

CLIMATOLOGICAL DATA: FLORIDA SECTION—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	October		November		December	
	Minimum	Date	Minimum	Date	Minimum	Date
Kissimmee					35	18
Lakeland	65	27	53	18†	40	16†
Lucerne Park			50	19		
Malabar	67	15	50	19	40	19†
McDonald	63	26†	45	19	34	18
Merritts Island	68	25	51	19	46	23
New Smyrna	66	25	50	19†	38	18†
Ocala	60	9	43	19	31	18
Okeechobee	66	20†				
Orange City	59	26	39	19	28	18
Orlando	63	27	44	19	36	18
Oxford						
Pinellas Park	64	27	48	23	35	18
Plant City						
Rockwell						
St. Cloud	68	8†	45	19	39	30
St. Leo	65	27	48	19	33	16
St. Petersburg	67	3	57	22†	42	16
Sanford	64	8†	42	19	35	18
Tampa	68	27	55	22	39	16
Tarpon Springs	65	27	51	19†	35	16
Titusville	66	25	48	19	37	30
Southern Division						
Arcadia	65	27†	46	24	37	30
Avon Park	67	13†	50	19†	42	30
Boca Grande					45	30
Bradentown	60	27	46	23	37	18
Davie	63	25	42	19	29	30
Fort Lauderdale	63	1	50	24	34	30
Fort Myers	67	1	53	25	40	30
Griffin	65	25†	45	19	32	30
Homestead	63	1	49	20†	35	24†
Hypoluxo	68	1†	47	19	33	30
Key West	70	29	64	20	59	31
Long Key	69	27	64	24	54	24
Miami (1)	70	28	54	19	40	24
Miami (2)	66	25	50	24	36	30
Moore Haven	63	29	41	19		
Punta Gorda	65	27	47	23	33	24†
Ritta	66	25	46	19	36	30
Sand Key	71	15	67	18	63	30

CLIMATOLOGICAL DATA: FLORIDA SECTION—(Continued).

Monthly Minimum Temperatures for the Year 1919, with Dates.

Stations	October		November		December	
	Minimum	Date	Minimum	Date	Minimum	Date
Western Division						
Apalachicola	68	20	45	14	31	15
Bonifay			40	15	27	16
DeFuniak Springs ...	61	1†	36	15	24	17
Garniers (near)	60	1	36	15	25	16
Marianna	59	20	36	15	25	16†
Molino						
Pensacola	61	18	37	14	30	15
St. Andrews	64	20	43	14	29	16
Wausau	60	20	39	15†	24	16†

Characters indicate the following days missing from report:
 †On other dates also.

AGRICULTURAL AND POPULATION STATISTICS

SAM L. ROGERS, *Director*

*Preliminary Announcement Agriculture Fourteenth
Census, 1920. Farms and Farm Property*

The Director of the Census announces, subject to correction, the following preliminary figures from the Census of Agriculture for Florida:

Farms and Farm Acreage	Jan. 1, 1920	Apr. 15, 1910
Number of farms.....	54,005	50,016
Operated by:		
Owners	38,487	35,399
Free from mortgage....	25,010	29,614
Mortgaged	8,102	5,160
No mortgage report....	5,375	625
Managers	1,829	1,275
Tenants	13,689	13,342
Operated by:		
White farmers	41,051	35,295
Native	38,836	34,080
Foreign-born	2,215	1,215
Colored farmers	12,954	14,721
Land in farms:		
Total acres	5,846,693	5,253,538
Improved acres	2,297,271	1,805,408
Average acreage per farm:		
Total	108.3	105.0
Improved	42.5	36.1
	Jan. 1, 1920	Apr. 15, 1910
Farm Values		
All farm property	\$329,286,817	\$143,183,183
Land and buildings.....	280,450,504	118,145,989

Implements and machinery	13,551,773	4,446,007
Live stock	35,284,540	20,591,187
Average value per farm:		
All farm property.....	6,097	2,863
Land and buildings.....	5,193	2,362
Land alone	4,211	1,874
Average value per acre:		
Land and buildings.....	47.97	22.49
Land alone	38.90	17.84
<hr/>		
Mortgage Debt	1920	1910
Farms reporting amount of debt:		
Number	7,308	4,159
Value	\$ 50,760,850	\$ 12,884,025
Amount of debt	12,911,813	2,709,970
Per cent of value.....	25.4	21.0
Average rate of interest		
paid, per cent	7.3	
Average debt per farm.....	1,767	652

The number of farms in Florida, according to the recent census, is 54,005. These farms contain 5,846,693 acres, of which 2,297,271 acres are improved land. Since 1910 the number of farms has increased 8.0 per cent; the total acreage, 11.3 per cent; and the improved acreage, 27.2 per cent. Sixteen and seven-tenths per cent of the land area of the state is in farms, and 39.3 per cent of the farm land is improved.

The value of all farm property is \$329,286,817, as compared with \$143,183,183 in 1910, an increase of 130.0 per cent. The value of land and buildings is \$280,450,504; of implements and machinery, \$13,551,773; and of live stock, \$35,284,540. As compared with 1910, the value of land and buildings for 1920 shows an increase of 137.4 per cent; of implements and machinery, 204.8 per cent; and of live stock, 71.4 per cent. The average value of land and buildings per farm is \$5,193, as compared with \$2,362 in 1910. The average value of land alone per acre is \$38.90, as against \$17.84 in 1910.

The value of the 7,308 farms, for which complete mortgage reports were secured, is \$50,760,850, and the amount of the mortgage debt is \$12,911,813, or 25.4 per cent of the value. The average rate of interest paid is 7.3 per cent. Twenty-four and five-tenths per cent of all farms operated by their owners are mortgaged, as compared with 14.8 per cent in 1910.

The number of white farmers is 41,051, of which 38,836 are native and 2,215 foreign born. Of the native white farmers, 30,256 are owners, 1,535 managers, and 7,045 tenants. Of the foreign born white farmers, 1,911 are owners, 193 managers, and 111 tenants. The 12,954 colored farmers comprise 6,320 owners, 101 managers and 6,533 tenants. The number of female farmers is 3,208, including 2,493 owners, 27 managers, and 688 tenants.

Approved:

W. L. AUSTIN,

Chief Statistician for Agriculture.

POPULATION OF STATES IN 1920, IN THE ORDER
OF THEIR RANK, WITH COMPARATIVE
RANK IN 1910 AND 1900:

(The figures for 1920 are subject to correction).

State	Population 1920	Rank in —Population—		
		1920	1910	1900
New York	10,384,144	1	1	1
Pennsylvania ...	8,720,159	2	2	2
Illinois	6,485,098	3	3	3
Ohio	5,759,368	4	4	4
Texas	4,661,027	5	5	6
Massachusetts ..	3,852,356	6	6	7
Michigan	3,667,222	7	8	9
California	3,426,536	8	12	21
Missouri	3,403,547	9	7	5
New Jersey	3,155,374	10	11	16
Indiana	2,930,544	11	9	8
Georgia	2,894,683	12	10	11
Wisconsin	2,631,839	13	13	13
North Carolina ..	2,556,486	14	16	15
Kentucky	2,416,013	15	14	12
Iowa	2,403,630	16	15	10
Minnesota	2,386,371	17	19	19
Alabama	2,347,295	18	18	18
Tennessee	2,337,459	19	17	14
Virginia	2,306,361	20	20	17
Oklahoma	2,027,564	21	23	30
Louisiana	1,797,798	22	24	23
Mississippi	1,789,384	23	21	20
Kansas	1,769,257	24	22	22
Arkansas	1,750,995	25	25	25
South Carolina ..	1,683,662	26	26	24
West Virginia ...	1,463,610	27	28	28
Maryland	1,449,610	28	27	26
Connecticut	1,380,585	29	31	29
Washington	1,356,316	30	30	34
Nebraska	1,295,502	31	29	27
Florida	966,210	32	33	33
Colorado	939,376	33	32	32
Oregon .48.....	783,389	34	35	36

Maine	768,014	35	34	31
North Dakota	645,730	36	37	40
South Dakota	635,839	37	36	38
Rhode Island	604,397	38	38	35
Montana	547,593	39	40	43
Utah	449,446	40	41	42
New Hampshire ..	443,083	41	39	37
Dist. Columbia ..	437,571	42	43	41
Idaho	431,826	43	45	46
New Mexico	360,247	44	44	44
Vermont	352,421	45	42	39
Arizona	333,273	46	46	47
Delaware	223,003	47	47	45
Wyoming	194,402	48	48	48
Nevada	77,407	49	49	49

DEPARTMENT OF COMMERCE, BUREAU OF CEN-
SUS, WASHINGTON, STATE OF FLORIDA

*Fourteenth Census Preliminary Announcement of
Population*

(Subject to Correction, 1920)

County	Population	County	Population
Alachua	30,115	Liberty	5,006
Baker	5,622	Levy	9,921
Bay	11,407	Madison	16,516
Bradford	12,503	Manatee	18,712
Brevard	8,505	Marion	23,968
Broward	5,135	Monroe	19,840
Calhoun	8,775	Nassau	11,340
Clay	5,621	Okaloosa	9,360
Citrus	5,220	Okeechobee	2,132
Columbia	14,290	Orange	19,890
Dade	42,731	Osceola	7,195
DeSoto	25,434	Palm Beach	18,654
Duval	113,540	Pasco	8,902
Escambia	49,386	Pinellas	28,265
Flagler	2,442	Polk	38,661
Franklin	5,318	Putnam	14,597
Gadsden	22,961	St. Johns	13,061
Hamilton	9,873	St. Lucie	7,886
Hernando	4,548	Santa Rosa	13,670
Hillsborough	87,901	Seminole	10,986
Holmes	12,850	Sumter	7,851
Jackson	31,224	Suwanee	19,789
Jefferson	14,502	Taylor	11,219
Lafayette	6,242	Volusia	23,225
Lake	12,744	Wakulla	5,129
Lee	9,540	Walton	12,119
Leon	18,059	Washington	11,828
		Total	966,210

INDEX

INDEX

The New Agriculture.....	13
Livestock Sanitary Board.....	23
Commercial Agriculture.....	40
Cooperative Marketing in Florida.....	77
Marketing Problems.....	85
Cooperative Marketing of Pecans.....	94
Soils and Fertilizers.....	98
The Everglades.....	130
Cabbage Culture in South Florida.....	159
Roselle, the Florida Cranberry.....	173
By-Products of Florida Fruits, Other Than Citrus..	175
Raising Grapes in Florida.....	186
How to Save Sweet Potatoes.....	188
Sweet Potato Grades.....	196
Sunflowers	200
How to Prevent Crystalization and Fermentation of Sugar Cane Sirup.....	204
Manufacture of Sugarcane Sirup on Small Scale....	214
Proceedings of Dairy Association.....	218
Corn Substitutes for Feeding Hogs.....	260
What Florida Has Done in Roadbuilding.....	267
Bibliography of Florida Literature.....	271
Climatological Data	277
Agricultural Statistics.....	350

SIXTEENTH BIENNIAL REPORT
Department of Agriculture
and Immigration

OF THE
STATE OF FLORIDA

Consisting of
STATISTICAL REPORT OF ENUMERATORS OF THE
AGRICULTURAL, HORTICULTURAL, TRUCK,
LIVE STOCK AND MANUFACTURING
INTERESTS OF THE STATE

Gathered During the Summer of 1920
ALSO
MISCELLANEOUS STATISTICS ON ALLIED
SUBJECTS AND GENERAL TOPICS

Parts 2-3

For the Years 1919-20

W. A. McRAE
Commissioner of Agriculture
Tallahassee, Fla.

INTRODUCTION

Statistics are said to be "dry," however they may express ideas and present facts of vital importance to all kinds of business. Though intended for reference, rather than for reading, statistical tables usually represent a greater expenditure of time in research and tabulation than does an equal space of straight reading matter.

Oftentimes statistics of a local character have little meaning unless coupled with general facts relating to the same theme. From the farmers' standpoint the value of products is of equal importance to the yield of crops, and values are no longer set locally. No community lives to itself today. With these facts and conditions to consider it is thought opportune to include in this report data on a wider range of subjects than mere farm and factory production,—finance and trade affect so intimately the prosperity of agriculture.

Our tax valuation for 1920 was \$409,588,938. Yet this is considered to be very much below the actual value of the property of the State.

The same thing is true of the enumerated value of our farm and manufactured products. Our report is from the producers in so far as they have been reached. Ten counties are totally lacking in this report for the reason that no one was found who was willing to do the work for the remuneration which goes for this service. This should be borne in mind in examining the totals for the State. It is also certain that the counties reporting have production not listed, as one trip over a county could scarcely be expected to result in finding all parties sought and securing a complete list of all things produced.

The reader's attention is called to the tables giving State production classified and those giving percentages of acreage improved and cultivated.

The miscellaneous tables will be found useful as a means of studying general conditions and as a source of general information.

STATEMENT OF EXPENDITURES OF APPROPRIATIONS.

In accordance with the provisions of Chapter 7783, Laws of Florida, Acts of the Legislature of 1919, I herewith submit the following detailed report of the expenditures of funds appropriated for the different divisions of the Department of Agriculture for 1919 and 1920:

July 1—By balance on hand.....	\$3,116.25
July 1—By appropriation for last six months, 1919.	1,000.00
	<hr/>
	\$4,116.25

POSTAGE—YEAR 1919.

Jan. 7—To postage on April Bulletin	\$ 24.98
Aug. 9—To postage	35.50
Aug. 22—To postage	124.00
Oct. 6—To postage on July Bulletin	21.90
Oct. 14—To postage	154.00
Oct. 15—To postage	101.00
Nov. 6—To postage	328.00
Dec. 2—To 7,000 No. 5 Envelopes, and 3,000 No. 8 Envelopes, 2c.	219.72
Dec. 8—To postage	275.00
Dec. 18—To postage	645.00
Jan. 8—To postage Oct. Bulletin...	19.30
Apr. 7—To postage Jan. Bulletin...	3.05
Apr. 8—To postage on maps.....	5.18
May 25—To postage	45.00
May 25—To 10,000 2c Envelopes No. 5, 3,000 2c Envelopes No. 8.....	284.88
Total.....	<hr/> \$2,286.51
Balance	\$1,829.74

POSTAGE, 1920.

July 14—To postage on April Bulletin	\$26.78
July 20—To postage	245.00
Oct. 12—To postage on July Bulletin	21.45
Nov. 22—To postage	85.00

Dec. 3—To postage	385.00
Dec. 3—To 3,000 No. 8 Envelopes, 7,000 No. 5 Envelopes, 2c.	228.24
Dec. 13—To postage on Oct. Bulletin	16.04
Total	\$1,007.48

Balance	\$ 822.26
---------------	------------------

EXPRESS AND TELEGRAMS.

1919.

By balance on hand July 1, 1919	\$1,543.62
By appropriation last six months 1919	500.00
July 7—To Western Union Tele- graph Co.	\$ 9.06
July 7—American Railway Express Co.	19.84
July 22—To freight on files	2.12
July 23—To Dixon Transfer, dray- age	2.00
Aug. 2—To American Railway Ex- press Co.	19.82
Aug. 6—To Western Union Tele- graph Co.	9.50
Aug. 14—To drayage on desk .....	.22
Sept. 5—To American Railway Ex- press Co.	32.43
Sept. 11—To Dixon Transfer, haul- ing Bulletins	2.00
Oct. 2—To American Railway Ex- press	31.26
Oct. 6—To Western Union Tele- graph Co.	18.18
Nov. 3—To American Railway Ex- press Co.	36.90
Nov. 5—To Western Union Tele- graph Co.	23.10
Nov. 12—To Telephone Co.	3.20
Nov. 15—To Dixon Transfer Co., hauling mail	2.00
Nov. 15—To Dixon Transfer Co. ....	.50
Nov. 19—To Dixon Transfer Co., freight, etc.	11.36

Dec. 4—To Western Union Telegraph Co.	15.65
Dec. 4—To American Railway Express Co.	41.28
Total.....	\$ 280.42

1920.

Jan. 7—To American Railway Express Co.	\$ 42.75
Jan. 7—To Western Union Telegraph Co.	12.47
Jan. 7—To Telephone Co.	1.60
Jan. 7—To Dixon Transfer Co., freight, etc. ....	.25
Jan. 16—To Dixon Transfer Co. ....	.25
Feb. 4—To Western Union Telegraph Co.	14.10
Feb. 4—To Dixon Transfer Co., freight and drayage.	4.29
Feb. 5—To American Railway Express Co.	48.08
March 4—To Western Union Telegraph Co.	13.99
March 4—To American Railway Express Co.	41.14
March 9—To Telephone Company...	2.00
March 23—To Dixon Transfer Co. ....	.50
March 26—To Dixon Transfer Co., freight and drayage on five cases maps	46.04
April 2—To American Railway Express Co.	37.67
April 3—To Western Union Telegraph Co.	14.09
April 3—To Telephone Co.	1.00
April 6—To Dixon Transfer, freight and drayage	28.35
May 6—To American Railway Express Co.	31.94
May 6—To Western Union Telegraph Co.	11.43
May 11—To Telephone Company....	1.00

June 4—To American Railway Express Co.	34.08
June 4—To Dixon Transfer Co.....	3.00
June 11—To Western Union Telegraph Co.	8.27
June 15—To Dixon Transfer Co.....	1.00
July 1—To S. A. L. Ry., under-charge on six cases maps.....	23.83
July 1—To American Railway Express Co.	74.83
July 3—To Western Union Telegraph Co.	14.22
July 23—To Dixon Transfer.....	.50
July 27—To Dixon Transfer.....	3.65
Aug. 3—To American Railway Express Co.	30.12
Aug. 5—To Western Union Telegraph Co.	27.05
Aug. 20—To Geo. D. Barnard Co....	4.38
Sept. 1—To American Railway Express Co.	18.06
Sept. 1—To Dixon Transfer Co....	3.00
Sept. 7—To Western Union Telegraph Co.	8.32
Oct. 4—To American Railway Express Co.	21.75
Oct. 7—To Western Union Telegraph Co.	14.50
Nov. 3—To American Railway Express Co.	27.31
Nov. 9—To Western Union Telegraph Co.	11.00
Nov. 16—To Dixon Transfer.....	.75
Nov. 27—To Dixon Transfer.....	3.00
Dec. 2—To American Railway Express Co.	43.72
Dec. 4—To Western Union Telegraph Co.	12.87
Jan. 1-21 (1920 App.)—American Railway Express Co.....	39.50

Jan. 1-2- (1920 App.)—Western Union Telegraph Co.....	16.35
Total.....	\$ 798.00
Total, 1919.....	\$ 280.42
Total.....	\$1,078.42

PRINTING STAMPS FOR FERTILIZER AND STOCK FEED.

1919.

July 1—Balance brought forward.....	\$ 1,896.19
July 1—By appropriation first six months, 1919	1,000.00
July 20—To Falconer Company...	\$ 94.70
Sept. 17—To Falconer Company...	283.15
Oct. 31—To Falconer Company...	95.04
Nov. 10—To Falconer Company ..	335.75
Dec. 16—To Falconer Company..	311.16
Dec. 31—To Falconer Company ..	986.70
Total	\$2,106.50
Balance carried forward.....	\$ 789.69

1920.

Feb. 4—To Falconer Company..	\$ 40.93
May 15—To Falconer Company..	126.75
June 5—To Falconer Company...	173.00
June 15—To Falconer Company..	242.90
Aug. 3—To Falconer Company..	70.37
Sept. 27—To Falconer Company..	139.38
Nov. 12—To Falconer Company..	192.18
Dec. 20—To Falconer Company..	413.48
Total	\$1,398.99
Cr by July appropriation.....	\$ 1,000.00
Balance	390.70

PRINTING QUARTERLY BULLETIN.

1919

By balance on hand	\$ 6,434.92
July 1—By appropriation last six months, 1919	\$ 1,500.00
Aug. 2—To T. J. Appleyard.....	\$ 20.00
Aug. 9—To T. J. Appleyard, printing July Bulletin.....	546.00
Sept. 5—To T. J. Appleyard.....	112.50
Oct. 2—To T. J. Appleyard.....	2.00
Oct. 7—To T. J. Appleyard.....	110.00
Oct. 7—To T. J. Appleyard.....	10.00
Oct. 7—To T. J. Appleyard.....	132.50
Nov. 3—To T. J. Appleyard, printing October Bulletin	358.80
Nov. 3—To T. J. Appleyard, printing mailing list	171.60
Nov. 3—To T. J. Appleyard.....	10.00
Dec. 18—To T. J. Appleyard.....	120.00
Total	\$1,593.40
Balance dropped.	

1920.

Jan. 1—By appropriation 1920..	\$ 3,000.00
Apr. 2—To T. J. Appleyard.....	111.50
May 6—To T. J. Appleyard.....	54.00
May 10—To T. J. Appleyard.....	15.00
May 6—To T. J. Appleyard, printing April Bulletin.....	852.80
July 2—To T. J. Appleyard.....	4.00
Aug. 10—To T. J. Appleyard, printing July Bulletin	665.60
Sept. 1—To T. J. Appleyard.....	3.25
Nov. 10—To T. J. Appleyard, printing October Bulletin.....	644.80
Supplements:	
Nov. 10—To T. J. Appleyard.....	8.00
Nov. 10—To T. J. Appleyard.....	27.20
Dec. 15—To T. J. Appleyard.....	80.00
Dec. 15—To T. J. Appleyard.....	64.00
Dec. 15—To T. J. Appleyard.....	16.00

Dec. 15—To T. J. Appleyard.....	152.00
Dec. 23—To T. J. Appleyard.....	66.00
Total	\$2,764.15
Balance dropped.	

EXTRA PRINTING FOR IMMIGRATION PURPOSES 1919.

1919.	
July 1—By balance brought forward.....	\$5,307.60
July 1—By appropriation last six months, 1919.	500.00
July 10—To T. J. Appleyard.....	\$556.25
July 25—To T. J. Appleyard.....	86.89
July 25—To T. J. Appleyard.....	368.00
Aug. 19—To T. J. Appleyard.....	200.00
Total.....	\$1,211.14
Balance dropped by Comptroller.	

1920.	
July 1—By Balance brought forward from 1919 appropriation	\$ 186.96
July 1—By Appropriation for 1920.....	1,000.00
Feb. 20—To T. J. Appleyard.....	\$ 48.96
Apr. 8—To Mathews-Northrup Wks.	1,138.00
Total.....	\$1,186.96

STATIONERY AND OTHER CONTINGENT EXPENSES.

1919.

July 1—By balance on hand.....	\$ 619.26
July 1—By appropriation last six months 1919	\$ 600.00
July 7—To Ed. H. Hopkins.....	\$ 1.25
July 7—To Walker Evans & Cogs- well	50.69
July 7—To H. R. Kaufman.....	1.45
July 7—To J. O. Williams.....	.50
July 7—To J. O. Williams.....	1.50
July 22—To Dixon Office Supply Co.	21.75

July 24—To E. H. Hopkins.....	25.00
Aug. 2—To Walker Evans Cogswell	93.33
Aug. 2—To H. R. Kaufman.....	.50
Aug. 2—To J. F. Hill	3.50
Aug. 6—To Florida Grower	2.00
Aug. 6—To P. W. Wilson & Co..	1.20
Aug. 6—To Oil Paint & Drug Re- porter	5.00
Aug. 6—To Underwood Typewriter Company	55.53
Aug. 6—To Underwood Typewriter Company	62.33
Aug. 6—To Underwood Typewriter Company	78.28
Aug. 16—To Walker-Evans-Cogswell	91.68
Aug. 16—To American Type Foun- dry Company	27.69
Aug. 28—To Hicks Drug Store.....	1.50
Sept. 5—To Walker-Evans-Cogswell	4.40
Sept. 5—To Ever Ready Roll Label Company	2.40
Sept. 5—To H. R. Kaufman	2.85
Sept. 5—To Underwood Typewriter Company	50.53
Sept. 10—To E. G. Chesley, Jr.	36.25
Sept. 11—To E. G. Chesley, Jr.....	4.55
Oct. 2—To Underwood Typewriter Company	83.03
Oct. 2—To Underwood Typewriter Company	9.60
Oct. 2—To W. L. Marshall.....	1.00
Oct. 6—To Pichard Bros.	147.64
Oct. 8—To G. I. Davis, Postmaster	1.00
Oct. 13—To Duskin-Reeves Company	4.50
Nov. 5—To American Cotton News, subscription	2.00
Nov. 5—To H. R. Kaufman	6.35
Nov. 5—To Underwood Typewriter Company	67.33
Nov. 5—To Underwood Typewriter Company	9.31
Nov. 8—To E. G. Chesley, Jr.	97.00
Nov. 14—To Geo. D. Barnard Co..	9.90
Nov. 22—To Subscription Manufac- turers' Record	6.50

Nov. 22—To Am. Cotton News....	2.00
Dec. 4—To J. F. Hill	2.00
Dec. 4—To H. R. Kaufman.....	2.35
Dec. 4—To Burroughs Adding Ma- chine Company	8.45
Dec. 4—To Yaeger-Rhodes Hard- ware Company	3.00
Dec. 13—To Telephone Company....	1.30
Dec. 18—To Neidick Process Co....	27.50
Dec. 18—To D. R. Cox Furniture Co.	10.00
Total	<u>\$1,127.42</u>

STATIONERY AND OTHER CONTINGENT
EXPENSES, 1920.

1920.

By Appropriation for year 1920.....	\$1,200.00
Jan. 7—To Walker Evans Cogswell. \$	15.91
Jan. 12—To J. F. Hill.....	4.00
Jan. 12—To H. R. Kaufman.....	2.20
Jan. 12—To H. Clay Crawford.....	2.00
Jan. 28—To Underwood Typewriter Company.....	64.83
Feb. 4—To T. J. Appleyard.....	7.50
Feb. 4—To Dixon Office Supply Co..	7.80
Feb. 4—To W. L. Marshall.....	2.50
Feb. 4—To H. R. Kaufman.....	.69
Feb. 4—To Walker Evans Cogswell.	78.75
Feb. 9—To Dixon Office Supply Co..	8.00
Feb. 9—To Argus Mfg. Company...	1.50
Feb. 17—To American Food Journal..	2.50
Mar. 4—To Southern Swine Growers' Association.....	5.00
Mar. 4—To T. J. Appleyard.....	2.50
Mar. 4—To E. G. Chesley, Jr.....	20.00
Mar. 4—To W. L. Marshall.....	4.50
Mar. 8—To Subscription to Southern Cultivator.....	3.00
Mar. 23—To Southern Telephone & Construction Company	3.00
Mar. 23—To Ever-Ready Roll Paper Company	8.40
Apr. 2—To Telephone Company	4.25

Apr. 2—To E. G. Chesley, Jr.....	4.00
Apr. 2—To H. R. Kaufman.....	2.50
Apr. 2—To Rand McNally & Co....	25.00
Apr. 2—To Underwood Typewriter Company	9.00
Apr. 2—To Walker Evans Cogswell Company	109.81
Apr. 21—To Geo. D. Barnard & Co...	187.52
Apr. 27—To Frontier Press Company.	10.50
May 6—To Telephone Company	4.25
May 6—To H. R. Kaufman.....	.50
May 6—To W. L. Marshall.....	12.60
May 6—To Walker Evans Cogswell Company	49.87
May 6—To Argus Mfg. Company...	3.00
May 12—To Dixon Office Supply Co.	.90
May 15—To Ever-Ready Roll Label Co	21.50
June 4—To Argus Mfg. Company...	1.50
June 4—To Burroughs Adding Ma- chine Company	8.45
June 4—To Telephone Company ...	4.25
June 4—To Jasmine Ink Corporation	4.50
June 4—To H. R. Kaufman.....	1.50
June 5—To The National Civic Fed- eration	7.50
June 5—To Dixon Office Supply Co.	15.00
July 1—To Telephone Company	4.25
July 2—To Hill's Book Store.....	2.70
July 6—To The American Journal of Public Health	5.00
July 20—To One Postal Guide (Post- master)	2.25
July 23—To Geo. D. Barnard Co....	82.00
July 23—To Walker Evans Cogswell Company	100.00
Aug. 3—To Telephone Company	6.25
Aug. 3—To Leon Electric Supply Co	1.75
Aug. 3—To Chauncey Wings Sons..	6.02
Aug. 3—To H. R. Kaufman.....	.75
Aug. 25—To Underwood Typewriter Company.	13.00
Sept. 1—To H. R. Kaufman.....	1.60
Sept. 1—To Fain Drug Company....	.37
Sept. 2—To Telephone Company	9.50

Sept. 2—To Hill's Book Store.....	2.05	
Sept. 20—To Subscription Manufacturers Record	6.50	
Sept. 20—To Subscription to Southern Ruralist .....	.50	
Oct. 4—To Telephone Company	11.25	
Oct. 4—To Hill's Book Store.....	1.25	
Oct. 26—To H. G. Hastings Co.....	4.80	
<hr/>		
Total.....	\$992.22	
Balance.		\$205.73

By balance on hand.....	\$	205.73
Nov. 1—To H. R. Kaufman.....	\$	1.00
Nov. 1—To Telephone Co.....		7.25
Nov. 1—To Yeager-Rhodes Hardware Co.		1.50
Nov. 10—To Hill's Book Store.....		21.34
Nov. 24—To Walker-Evans-Cogswell Co.		28.00
Dec. 2—To Telephone Co.....		8.15
Dec. 4—To Hill's Book Store.....		6.00
Dec. 8—To Walker-Evans-Cogswell Co.		48.89
Dec. 13—To Western Union Telegraph Co. ....		.65
Dec. 14—To Burroughs Adding Machine Co.		8.45
Dec. 28—To Leon Electric Supply Co.		15.74
Dec. 28—To International Farm Congress (Year Book).....		2.00
Dec. 29—To Walker-Evans-Cogswell Co.		18.15
Dec. 30—To H. R. Kaufman.....		6.50
Dec. 30—To Telephone Co.....		7.25
<hr/>		
Total.....	\$	180.87
Balance dropped.		

**TRAVELING EXPENSES COMMISSIONER OF
AGRICULTURE, 1919.**

Balance on hand.....	\$699.51
By appropriation June 30th, 1919.....	200.00
By appropriation to January 1st, 1920.....	300.00

Voucher No.	Date.	Amount.
15655.....	July 2.....	\$ 21.63
18354.....	Aug. 2.....	17.50
22940.....	Sept. 24.....	90.00
23035.....	Oct. 1.....	179.80
24076.....	Oct. 9.....	12.08
25919.....	Oct. 22.....	22.18
26640.....	Nov. 3.....	11.70
26641.....	Nov. 3.....	18.20
29287.....	Nov. 24.....	150.00
29302.....	Nov. 25.....	34.23
29250.....	Dec. 2.....	5.75
25921.....	Dec. 2.....	20.32
32358.....	Dec. 16.....	21.95
33501.....	Dec. 24.....	150.00

Total\$755.34

Balance dropped\$444.17

**TRAVELING EXPENSES COMMISSIONER OF
AGRICULTURE, 1920.**

By appropriation for 1920.....\$600.00

Voucher No.	Date.	Amount.
3911.....	Feb. 4.....	\$ 10.30
3912.....	Feb. 4.....	24.05
6617.....	Mch. 2.....	74.95
7982.....	Mch. 10.....	24.00
9566.....	Mch. 16.....	60.00
9879.....	Mch. 23.....	60.00
11404.....	Apr. 12.....	6.95
13121.....	Apr. 26.....	28.35
13811.....	May 5.....	7.10
26605.....	Sept. 3.....	2.75

30217.....	Oct. 12.....	17.31
31636.....	Oct. 20.....	60.00
32621.....	Nov. 3.....	15.81
35021.....	Nov. 24.....	90.00
35028.....	Nov. 27.....	32.26
38262.....	Dec. 29.....	13.28

Total\$527.11

Balance dropped\$72.89

SUMMARY OF PRODUCTION BY YEARS.

Below is given a summary by years of the agricultural production as received through its enumerators by this Department. By comparison they serve to show the general trend of the farming, trucking, horticultural and live stock interests of the State.

YEAR 1913-14.

Field Crops, acres	1,081,434
Vegetable and Garden Products, acres.....	93,413

Total Acreage in Cultivation 1,174,847

Total Value of All Farm Products.

Table No. 1—Field Crops	\$18,861,389
Table No. 2—Vegetable and Garden Products	13,185,904
Table No. 3—Fruit Products	13,447,435
Table No. 4—Live Stock on Hand.....	29,541,931
Table No. 5—Poultry and Products.....	4,665,001
Table No. 6—Dairy Products	4,130,925
Table No. 7—Apiary Products	104,550

Total\$83,937,135

YEAR 1915-16.

Total Acreages of Crops.

Field Crops, acres	1,478,428
Vegetable and Garden Products, acres.....	68,955

Total Acreage in Cultivation 1,547,383

Total Value of All Farm Products.

Table No. 1—Field Crops	\$21,613,300
Table No. 2—Vegetable and Garden Products.	10,724,519
Table No. 3—Fruit Products	13,511,950
Table No. 4—Live Stock on Hand	29,869,842
Table No. 5—Poultry and Products	4,559,876
Table No. 6—Dairy Products	3,881,452
Table No. 7—Miscellaneous Products	174,225

Total Values\$84,335,164

YEAR 1917-18.

Total Acreages of Crops.

Field Crops, Acres	1,531,338
Vegetable and Garden Products	105,645

Total Acreage in Cultivaeion 1,636,983

Total Value of All Farm Products.

Table No. 1—Field Crops	\$31,145,904
Table No. 2—Vegetables and Garden Products	18,838,149
Table No. 3—Fruit Products	16,381,818

Live Stock on Hand July 1, 1918, Viz.:

Horses	\$ 5,764,451
Mules	7,782,483
Milch Cows	2,542,446
* All Other Cattle.....	23,670,239
Other Cattle Shipped.....	2,075,552
* Hogs on Hand.....	8,767,353
Other Hogs	11,478,002
Sheep and Goats.....	492,847
	\$62,573,373
Table No. 5—Poultry and Products.....	\$ 5,993,243
Table No. 6—Dairy and Products.....	6,017,296
Table No. 7—Miscellaneous Products	312,993

Grand Total.\$141,262,776

*The total number of hogs for the twelve (12) months would have been 2,164,722, if we could have included the 477,500 butchered and the 591,651 that were shipped out

of the counties and the State for market by packers and others. The value of hogs butchered and shipped was for the butchered \$6,069,841, and those shipped \$5,408,161, or a total of \$20,245,355 for hogs alone, including those on hand July 1, 1918.

*There were 85,689 cattle exported from the counties and State by packers and feeders in and out of the State valued at \$2,075,552.

VALUE OF ALL CROPS, 1920.

Field crops	\$27,671,320
Fruits	26,788,500
Stock cattle on hand July, 1920	21,444,525
Truck products	15,818,297
Horses and mules on hand July, 1920	12,282,604
Poultry and eggs	7,768,195
Milk and butter	6,427,304
Hogs on hand July, 1920	5,076,851
Milk cows on hand July, 1920	2,204,186
Thoroughbred cattle on hand July, 1920	1,454,154
Sheep, wool and goats	505,298
Honey and beeswax	98,515
Total	\$124,559,749

Nineteen per cent. of the State is not represented in the above because ten counties did not report.

The aggregate value of all soil products actually marketed in the State during 1920 was approximately \$80,000,000.

COUNTIES.	†Number of Farms 1917-18.	Average Acreage of Farms 1917-18.	†Number of Farms 1919-20.	Average Acreage of Farms 1919-20.	Percentage of Farms Improved 1920.	Percentage of Farms Actually Cultivated 1920.
Alachua	3,314	95.7	3,645	92.2	55	29
Baker	1,075	42.1	990	30.7	62	54
*Bay	1,853	2.6	...	...	...	...
Bradford	4,142	38.47	2,454	70.6	55	21
Brevard	942	75.7	1,157	44.2	16	7
Broward	1,171	16.9	297	43.1	36	22
Calhoun	1,365	53.4	1,370	68.4	26	15
*Citrus	224	129.9	...	...	...	...
Clay	525	138.4	555	176.2	15	6
Columbia	3,256	45.9	2,325	56.4	52	25
*Dade	4,125	6.7	...	...	...	...
DeSoto	5,565	36.0	5,985	118.0	9	7
Duval	10,800	9.53	2,250	44.	15	10
Escambia	5,837	14.2	7,020	6.0	52	45
*Flagler	225	69.7	...	...	...	...
Franklin	1,064	8.3	992	8.6	21	4
*Gadsden	1,519	158.3	...	...	...	...
Hamilton	2,250	81.74	2,130	59.7	48	18
Hernando	325	34.45	707	43.9	43	20
Hillsborough	13,692	6.7	15,031	5.2	38	21
Holmes	1,925	55.0	2,317	59.7	55	51
Jackson	5,385	41.3	5,625	42.12	95	95
Jefferson	2,700	61.3	1,710	98.77	57	44
LaFayette	1,455	59.4	626	152.9	44	26
Lake	1,110	53.9	1,755	56.2	31	11
Lee	1,252	71.6	2,550	28.5	20	3
Leon	3,579	71.54	3,690	62.6	43	35
Levy . . . . .	...	...	816	125.4	36	25
Liberty	705	77.9	1,985	53.5	7	7
Madison	3,375	25.0	4,095	116.0	18	12
Manatee	1,575	33.9	1,470	17.57	42	23
Marion	4,870	43.64	1,429	112.7	48	34
*Monroe	52	137.0	...	...	...	...
Nassau	433	334.3	1,380	51.7	13	8
Okaloosa	1,401	69.3	733	99.3	35	35
Okeechobee	218	48.1	294	20.6	29	18
Orange	2,306	47.0	4,033	44.8	18	5
Osceola	2,031	16.0	2,481	16.2	21	8
Palm Beach	2,205	47.2	2,024	11.6	75	42
Pasco	2,565	24.53	1,153	35.4	40	16
*Pinellas	840	40.8	...	...	...	...
Polk	5,813	17.58	5,400	37.8	31	9
Putnam	3,720	8.5	1,510	46.6	31	14
Santa Rosa	1,575	43.52	3,270	29.0	32	26
*Seminole	993	20.35	...	...	...	...
St. Johns	2,742	25.35	2,549	20.8	35	44
*St. Lucie	1,796	60.0	...	...	...	...
*Sumter . . . . .	...	...	...	...	...	...
Suwannee	2,955	54.1	2,595	94.3	64	47
Taylor	1,415	11.48	2,036	17.4	23	21
Volusia	4,210	12.9	3,384	19.6	36	22
Wakulla	780	129.0	945	66.9	33	23
Walton	1,745	44.5	2,910	13.6	76	76
Washington	1,857	48.1	1,980	52.7	30	28
Total	133,347	...	113,653	...	...	...

*Not reported, 1920.

†The number of names reported is taken to represent the number of farms, but is really about twice the number of farms.

APPROXIMATE AREA IN SQUARE MILES, ACRES, ETC.

COUNTIES.	Approximate Area in Square Miles.	Approximate Area in Acres.	Acres in Actual Cultivation 1913-14.	Acres in Actual Cultivation 1915-16.	Acres in Actual Cultivation 1917-18.	Acres in Actual Cultivation 1919-20.
Alachua . . .	1,283	807,680	77,644	105,862	123,351	99,275
Baker . . .	585	375,680	16,090	16,781	19,781	16,537
Bay . . .	692	442,880	2,542	1,484	3,909	.....
Bradford . . .	522	344,960	43,880	57,867	59,413	30,847
Brevard . . .	1,156	656,000	576	698	1,572	366
Broward . . .	720	460,800	.....	5,902	13,300	2,929
Calhoun . . .	1,060	762,880	13,775	19,861	31,662	23,924
Citrus . . .	612	396,800	7,926	16,442	8,045	.....
Clay . . .	622	394,880	4,211	4,472	8,875	6,611
Columbia . . .	792	506,880	58,249	61,302	83,969	33,606
Dade . . .	2,373	1,450,720	13,081	10,288	9,751	.....
DeSoto . . .	3,755	2,402,560	9,778	12,229	34,468	50,084
Duval . . .	822	503,040	9,046	5,207	6,740	10,000
Escambia . . .	668	420,480	16,143	19,652	20,778	18,409
Flagler . . .	484	309,760	.....	.....	5,513	.....
Franklin . . .	731	446,240	1,209	633	462	347
Gadsden . . .	500	345,600	47,726	51,001	46,572	.....
Hamilton . . .	508	337,920	37,917	61,100	63,597	22,839
Hernando . . .	475	318,080	3,175	6,924	8,625	6,331
Hillsborough . . .	1,075	688,000	10,352	17,245	28,617	16,626
Holmes . . .	435	293,120	38,468	38,468	59,899	79,385
Jackson . . .	963	617,600	237,367	234,458	155,046	236,822
Jefferson . . .	593	374,400	57,661	68,249	76,086	75,232
LaFayette . . .	1,202	796,160	23,299	30,147	58,818	25,534
Lake . . .	1,128	670,080	12,335	8,377	6,136	11,570
Lee . . .	4,641	2,579,840	1,809	1,140	2,994	2,042
Leon . . .	730	457,600	61,173	87,986	92,653	82,234
Levy . . .	1,133	731,520	21,294	22,760	39,381	26,040
Liberty . . .	725	526,720	5,620	5,849	7,952	7,638
Madison . . .	693	460,160	66,771	71,914	73,334	57,338
Manatee . . .	1,275	855,680	5,575	7,774	11,918	6,008
Marion . . .	1,640	1,054,080	39,897	75,622	92,199	54,838
Monroe . . .	1,125	704,000	892	.....	185	.....
Nassau . . .	645	403,200	6,414	7,093	5,930	6,189
Okaloosa . . .	949	607,360	.....	34,618	40,712	26,052
Okeechobee . . .	720	460,800	.....	.....	30,085	1,149
Orange . . .	955	569,600	3,454	7,207	11,206	9,626
Osceola . . .	1,431	915,840	1,684	2,626	2,034	3,511
Palm Beach . . .	2,688	1,720,520	3,614	7,587	27,213	6,663
Pasco . . .	750	490,880	8,300	11,076	15,345	6,596
Pinellas . . .	234	149,760	747	2,209	1,652	.....
Polk . . .	1,967	1,220,480	6,878	6,770	14,739	19,294
Putnam . . .	772	481,280	11,092	19,772	17,008	9,856
Santa Rosa . . .	1,026	656,640	33,813	26,590	22,761	25,114
Seminole . . .	360	230,400	3,096	2,960	8,255	.....
St. Johns . . .	626	407,040	32,611	26,556	36,115	23,633
St. Lucie . . .	1,024	741,760	1,622	897	4,239	.....
*Sumter . . .	599	373,120	26,039	25,973	.....	.....
Suwannee . . .	680	442,880	.....	103,210	88,753	114,824
Taylor . . .	1,100	680,960	10,048	17,741	15,275	7,480
Volusia . . .	1,119	700,160	7,619	11,379	12,301	15,048
Wakulla . . .	601	385,280	13,065	14,833	18,235	14,836
Walton . . .	1,058	677,120	31,448	33,543	30,562	27,764
Washington . . .	652	469,320	28,626	31,874	30,769	30,254
Totals . . .	54,240	35,111,040	1,174,847	1,547,383	1,686,983	1,879,301

*Not reported.

AGRICULTURAL STATISTICS OF LAND AREAS IN FARMS.
LAND AREAS IN FARMS.

COUNTIES.	Total Acres in Farms.	Acres Improved.	Acres Unimproved.	Acres in Wood or Timber.	Acres Cut- over Land.	Merchantable Pine Timber. Acres
Alachua . . .	336,302	187,134	3,387	54,876	60,218	22,922
Baker	30,397	18,949	897	4,125	9,032	5
*Bay						
Bradford . . .	173,364	81,998	111,367	111,367	84,764	26,603
Brevard	51,250	8,260	43,890	18,887	10,715	14,110
Broward	12,821	4,646	4,175	1,500	2,000	500
Calhoun	93,801	25,138	71,653	71,653	46,397	25,256
*Citrus						
Clay	97,817	14,970	82,847	1,613	77,157	4,077
Columbia	131,283	68,966	62,317	20,620	14,506	4,511
*Dade						
DeSoto	706,242	64,134	43,580	18,170	13,249	13,249
Duval	100,000	15,000	4,275	9,829	589	576
Escambia	42,526	21,202	21,324	21,324	21,324	540
*Flagler						
Franklin	8,550	1,800	6,750	5,175		
*Gadsden						
Hamilton	127,217	62,199	65,018	27,534	24,615	5,693
Hernando	31,072	13,412	17,660	10,944	9,076	1,868
Hillsborough . .	78,682	30,267	21,170	18,041	23,841	5,363
Holmes	138,497	76,385	81,485	81,485	78,452	3,033
Jackson	236,929	236,822	88,833	30,699	33,927	33,374
Jefferson	168,905	97,411	53,007	26,123	12,889	10,970
LaFayette	95,725	42,460	49,783	49,248	42,904	2,187
Lake	98,718	30,998	52,545	10,802	42,687	11,817
Lee	72,720	14,935	25,130	12,699	745	13,893
Leon	231,530	100,582	43,085	60,475	19,736	7,651
Levy	102,395	37,413	54,275	30,990	2,908	6,917
Liberty	106,270	8,000	1,025	3,511	2,000	3,200
Madison	475,174	88,767	162,432	71,379	17,182	123,327
Manatee	25,837	10,768	15,134	15,008	10,441	15,116
Marion	160,077	78,036	31,243	26,927	24,853	373
*Monroe						
Nassau	71,429	9,645	60,975	1,137	23,781	650
Okaloosa	72,796	26,990	2,384	42,709	1,265	1,292
Okeechobee . . .	6,069	1,799	3,931	1,521	115	1,765
Orange	180,886	32,444	2,583	22,027	55,455	67,377
Osceola	40,203	8,624	19,007	12,582	5,022	5,328
Palm Beach . . .	15,614	11,719	4,957	390	90	60
Pasco	40,885	16,757	1,367	7,201	10,117	5,518
*Pinellas						
Polk	204,492	65,000	100,000	39,492	3,453	3,165
Putnam	68,938	21,797	47,141	43,238	40,461	4,422
Santa Rosa	95,114	30,590	64,524	9,086	53,873	1,565
*Seminole						
St. Johns	53,000	19,000	11,000	11,000	10,000	2,000
*St. Lucie						
*Sumter						
Suwannee	246,718	153,849	87,660	12,584	23,640	5,242
Taylor	35,500	8,323	220	1,080	10,796	1,468
Volusia	66,403	23,933	1,575	21,320	10,181	9,388
Wakulla	63,242	21,360		41,882		
Walton	39,445	30,189	7,695	1,919	3,462	2,703
Washington . . .	104,498	31,400	46,957	26,141		
Total	5,339,333	1,939,071	1,679,763	1,110,312	937,918	469,073

*Not reported.

AGRICULTURAL STATISTICS OF COTTON.

COUNTIES.	COTTON, UPLAND.			COTTON, SEA ISLAND.		
	Acres.	Bales.	Value Dollars.	Acres.	Bales.	Value Dollars.
Alachua . . .	416	67	7,010	81	2	270
Baker . . .	45	8	1,265	302	182	5,162
*Bay . . .	238	19	2,336	273	4	1,311
Bradford . . .						
Brevard . . .						
Broward . . .						
Calhoun . . .	713	150	27,990			
*Citrus . . .						
Clay . . .	8	1	100	1		60
Columbia . . .	1,280	134	19,860	1,722	172	95,310
*Dade . . .						
DeSoto . . .				20	10	2,000
Duval . . .	6	2	551			
Escambia . . .	3,272	408	59,403			
*Flagler . . .						
Franklin . . .						
*Gadsden . . .						
Hamilton . . .	715	125	26,100	7,278	821	190,845
Hernando . . .						
Hillsborough . . .	5	1	250	14	6	1,175
Holmes . . .	22,503	1,716	257,462			
Jackson . . .	13,045	4,082	140,624	6	1	250
Jefferson . . .	7,377	1,293	176,247	23	6	900
LaFayette . . .	199	24	3,058	1,540	134	32,159
Lake . . .	10	4	1,150	110	34	10,650
Lee . . .						
Leon . . .	15,767	3,481	422,314			
Levy . . .	244	63	11,678	102	12	2,605
Liberty . . .	78	35	5,250			
Madison . . .	4,957	869	115,279	536	54	11,422
Manatee . . .						
Marion . . .				6	2	500
*Monroe . . .						
Nassau . . .	3	2	250			
Okaloosa . . .	7,215	1,537	278,430			
Okeechobee . . .	9	2	203			
Orange . . .	98	18	4,369			
Osceola . . .						
Palm Beach . . .						
Pasco . . .	7	5	500			
*Pinellas . . .						
Polk . . .	10	2	520	100	50	17,600
Putnam . . .				13	6	780
Santa Rosa . . .	4,202	760	129,310	50	20	6,000
*Seminole . . .						
St. Johns . . .						
*St. Lucie . . .						
*Sumter . . .						
Suwannee . . .	4,772	574	63,914	13,549	5,620	389,972
Taylor . . .	72	16	2,260	25	5	900
Volusia . . .						
Wakulla . . .	65	16	2,532			
Walton . . .	3,888	840	133,827			
Washington . . .	1,624	421	48,026	32	9	1,263
Total . . .	92,843	16,675	1,942,068	26,083	7,150	771,134

*Not reported.

AGRICULTURAL STATISTICS OF CORN.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua	53,882	622,743	963,266
Baker	10,279	100,985	162,822
*Bay			
Bradford	32,651	303,442	435,150
Brevard	78	1,750	4,240
Broward	104	2,650	3,275
Calhoun	10,979	129,342	163,120
*Citrus			
Clay	4,345	39,103	84,547
Columbia	18,146	181,460	181,460
*Dade			
DeSoto	9,594	200,263	395,928
Duval	1,065	19,548	40,242
Escambia	9,904	105,910	162,106
*Flagler			
Franklin	66	665	1,330
*Gadsden			
Hamilton	2,583	237,812	245,267
Hernando	3,564	68,905	94,921
Hillsborough	9,377	151,820	310,966
Holmes	27,261	232,424	464,848
Jackson	153,971	844,469	1,206,587
Hernando	3,564	68,905	94,921
LaFayette	13,496	117,502	117,547
Lake	3,505	36,260	107,590
Lee	255	3,904	8,990
Leon	49,474	569,138	746,362
Levy	13,364	142,654	177,801
Liberty	1,900	28,500	50,000
Madison	45,080	299,951	299,951
Manatee	1,259	16,853	31,740
Marion	23,990	278,062	411,863
*Monroe			
Nassau	3,740	87,113	132,531
Okaloosa	17,164	154,443	273,263
Okeechobee	762	16,906	33,219
Orange	3,468	62,737	128,608
Osceola	2,353	28,595	57,196
Palm Beach	1,191	67,610	143,420
Pasco	3,643	50,754	101,508
*Pinellas			
Polk	9,500	133,000	266,000
Putnam	4,558	46,679	95,105
Santa Rosa	13,938	162,276	322,891
*Seminole			
St. Johns	1,599	45,905	102,315
*St. Lucie			
*Sumter			
Suwannee	58,228	466,968	466,968
Taylor	4,943	33,445	41,975
Volusia	8,406	67,180	134,360
Wakulla	11,363	77,017	77,017
Walton	15,908	141,766	283,289
Washington	14,866	136,329	313,384
Total	725,002	6,951,618	10,280,716

*Not reported.

AGRICULTURAL STATISTICS OF OATS.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua	1,316	18,050	25,790
Baker	125	1,227	1,930
*Bay			
Bradford	1,061	4,655	5,380
Brevard	1	30	90
Broward	20	500	600
Calhoun	519	5,390	5,430
*Citrus			
Clay	136	910	2,279
Columbia	600	6,000	6,000
*Dade			
DeSoto	15	445	945
Duval	25	875	1,765
Escambia	461	4,764	4,764
*Flagler			
Franklin			
*Gadsden			
Halimton	154	1,055	2,000
Hernando	5	100	125
Hillsborough	64	967	1,947
Holmes	882	8,860	8,860
Jefferson	2,075	40,297	40,297
Jefferson	2,075	40,297	40,297
LaFayette	53	440	480
Lake			
Lee			
Leon	1,947	21,125	21,125
Levy	329	5,588	8,496
Liberty	70	1,400	2,800
Madison	1,240	11,705	13,105
Manatee	5	25	50
Marion	1,937	12,155	31,195
*Monroe			
Nassau	347	6,755	14,045
Okaloosa	278	1,925	4,050
Okeechobee			
Orange	5	100	200
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk			
Putnam	184	3,330	5,295
Santa Rosa	460	6,165	7,295
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
*Sumter			
Suwannee	392	4,000	5,120
Taylor			
Volusia	231	2,200	2,200
Wakulla	4	50	50
Walton	387	3,355	6,980
Washington	392	4,242	10,590
Total	20,203	223,873	286,835

*Not reported.

AGRICULTURAL STATISTICS OF WHEAT.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard			
Broward			
Calhoun			
*Citrus			
Clay	2	20	30
Columbia			
Dade			
DeSoto			
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	21	883	2,815
Holmes	5	100	100
Jackson			
Jefferson	13	362	362
LaFayette			
Lake			
Lee			
Leon	10	100	100
Levy	4	100	100
Liberty			
Madison	12	240	480
Manatee			
Marion	8	80	160
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk			
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington	1	20	40
Total	76	1,905	4,187

*Not reported.

AGRICULTURAL STATISTICS OF SUGAR CANE.

COUNTIES.	Acres.	Gallons Syrup.	Value Dollars.	Pounds Sugar.	Value Dollars.
Alachua	829	182,573	182,573		
Baker	195	1,667	67,055		
Bay					
Bradford	945	169,028	176,447	1,100	300
Brevard	22	4,445	6,876		
Broward					
Calhoun	411	176,178	176,178		
*Citrus					
Clay	135	13,379	21,743	500	85
Columbia	277	29,700	29,700		
Dade					
DeSoto	1,011	153,611	267,685	100	20
Duval	274	20,725	26,123		
Escambia	180	31,963	31,913		
Flagler					
Franklin	54	25,920	25,920		
*Gadsden					
Hamilton	246	55,658	105,963		
Hernando	170	26,335	26,435		
Hillsborough	606	85,644	124,540	1,554	327
Holmes	480	79,436	79,436		
Jackson	1,728	328,712	348,313		
Jefferson	782	151,646	151,676		
LaFayette	175	41,790	41,952		
Lake	177	24,540	30,100		
Lee	47	57,629	101,091		
Leon	966	157,693	157,693		
Levy	230	46,157	48,473	80	16
Liberty	150	60,000	52,000		
Madison	236	141,327	191,327		
Manatee	236	45,730	69,186	500	50
Marion	527	73,610	7,400	100	20
Monroe					
Nassau	323	97,046	104,625	150	30
Okaloosa	481	24,328	24,328		
Okeechobee	103	32,347	46,959		
Orange	54	7,500	10,343		
Oscola	76	30,986	51,546		
Palm Beach	825	231,210	231,210		
Pasco	252	54,570	109,140		
*Pinellas					
Polk	800	20,000	25,000	200	40
Putnam	153	24,613	24,831	200	40
Santa Rosa	350	72,632	104,345		
*Seminole					
St. Johns	172	24,145	36,038	9,200	922
*St. Lucie					
*Sumter					
Suwannee	359	75,655	81,980		
Taylor	139	23,340	23,340		
Volusia	221	23,680	35,520		
Wakulla	245	44,180	44,180		
Walton	569	50,160	73,895		
Washington	420	102,571	102,571		
Total	16,631	3,124,049	3,683,693	13,704	1,850

*Not reported.

AGRICULTURAL STATISTICS OF SORGHUM SYRUP.

COUNTIES.	Acres.	Gallons.	Value Dollars.
Alachua	34	750	900
Baker			
*Bay			
Bradford			
Brevard			
Broward	3	100	100
Calhoun			
*Citrus			
Clay			
Columbia			
*Dade			
DeSoto	7	1,200	2,025
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando	1	120	120
Hillsborough	1	5	10
Holmes	7	666	666
Jackson			
Jefferson	51	950	775
LaFayette			
Lake			
Lee	4	400	200
Leon	16	3,620	3,620
Levy			
Liberty			
Madison			
Manatee			
Marion	8	3,000	3,000
*Monroe			
Nassau			
Okaloosa	12	991	956
Okeechobee			
Orange	1	80	20
Osceola	14	1,400	700
Palm Beach			
Pasco	7	115	225
*Pinellas			
Polk			
Putnam	1	60	60
Santa Rosa	3	220	220
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	26	498	333
Taylor	2	210	200
Volusia	17	950	1,425
Wakulla			
Walton	43	587	612
Washington			
Total	258	15,922	16,167

*Not reported.

AGRICULTURAL STATISTICS OF SORGHUM FORAGE.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford	100	100	800
Brevard	1	1	20
Broward	20	50	200
Calhoun			
*Citrus			
Clay	2	6	74
Columbia			
*Dade			
DeSoto	1	4	120
Duval			
Escambia	6	353	3,730
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	4	4	120
Holmes	4	4	80
Jackson	38	1,140	22,800
Jefferson			
LaFayette	4	5	200
Lake			
Lee	4	7	140
Leon	96	319	3,660
Levy			
Liberty			
Madison			
Manatee			
Marion	194	402	4,745
*Monroe			
Nassau			
Okaloosa			
Orange	3	12	200
Osceola	3	9	450
Palm Beach	15	17	1,400
Pasco			
*Pinellas			
Polk	25	100	2,500
Putnam	14	105	2,000
Santa Rosa	1	1	20
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	1	2	40
Taylor	1	1	25
Volusia			
Wakulla			
Walton	3		60
Washington	25	287	1,607
Total	565	2,931	44,441

*Not reported.

AGRICULTURAL STATISTICS OF TOBACCO.
Open Field Culture.

(A) COUNTIES.	Acres.	Pounds.	Value Dollars.
Alachua			
Baker	5	100	200
*Bay			
Bradford			
Brevard			
Broward			
Calhoun			
*Citrus			
Clay	1	200	80
Columbia			
*Dade			
DeSoto			
Duval			
Escambia			
*Flagler			
Franklin			
*Gadsden			
Hamilton	1	800	280
Hernando			
Hillsborough			
Holmes	1	242	121
Jackson			
Jefferson	8	1,000	400
LaFayette			
Lake			
Lee			
Leon	20	16,700	5,940
Levy	5	1,700	2,057
Liberty	5	4,000	2,560
Madison	52	66,700	65,540
Manatee			
Marion	7	60	130
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach			
Pasco	20	20,000	10,000
*Pinellas			
Polk			
Putnam			
Santa Rosa	50	600	195
*Seminole			
St. Johns			
*St. Lucie			
*Sumter	11	4,800	2,400
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	186	116,933	89,930

*Not reported.

AGRICULTURAL STATISTICS OF TOBACCO.
Grown Under Shade.

(B) COUNTIES.	Acres.	Pounds.	Value Dollars.
Alachua			
Baker			
Baldwin			
Barnes			
Bay			
Brevard			
Broward			
Bunell			
*Citrus			
Clay			
Columbia			
*Dade			
DeSoto			
Duval			
Escambia			
*Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough			
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee			
Leon	120	6,100	6,100
Levy			
Liberty			
Madison	167	213,700	172,400
Manatee			
Marion			
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach			
Pasco	130	130,000	60,000
*Pinellas			
Polk			
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	66	2,585	140,200
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	483	361,385	378,700

*Not reported.

AGRICULTURAL STATISTICS OF RICE.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua			
Baker	3	60	170
Bay			
Bradford	176	3,176	11,806
Brevard			
Broward			
Calhoun	18	305	520
*Citrus			
Clay	53	1,066	3,535
Columbia	34	340	680
Dade			
DeSoto	272	12,294	32,827
Duval	5	113	339
Escambia	44	823	1,451
Flagler			
Franklin			
*Gadsden			
Hamilton	38	1,720	2,015
Hernando	91	2,110	6,945
Hillsborough	96	1,766	4,669
Holmes	105	2,056	2,056
Jackson	10	200	515
Jefferson	2	50	60
LaFayette	54	640	1,300
Lake			
Lee	45	700	4,846
Leon	5	87	184
Levy	12	124	613
Liberty			
Madison	9	394	1,078
Manatee	83	1,835	3,772
Marion	109	2,538	7,745
*Monroe			
Nassau	63	1,690	6,750
Okaloosa	40	511	774
Okeechobee			
Orange	19	384	2,081
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk	20	200	600
Putnam	48	668	2,310
Santa Rosa	45	1,332	2,966
*Seminole			
St. Johns	5	450	630
*St. Lucie			
*Sumter			
Suwannee	161	3,901	5,970
Taylor	36	380	1,220
Volusia	84	415	830
Wakulla	1	20	60
Walton	13	710	1,095
Washington	118	2,892	9,271
Total	1,867	45,950	121,683

*Not reported.

AGRICULTURAL STATISTICS OF FIELD PEAS.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua			
Baker	3	21	100
Bay			
Bradford	161	221	2,562
Brevard	35	900	2,385
Broward	35	100	250
Calhoun	26	210	220
*Citrus			
Clay	10	118	382
Columbia	165	1,650	3,300
Dade			
DeSoto	600	7,115	22,535
Duval	144	3,240	10,086
Escambia	63	481	1,605
Flagler			
Franklin	15	305	1,220
*Gadsden			
Hamilton	243	1,745	3,603
Hernando	8	100	200
Hillsborough	372	5,754	14,110
Holmes	24	110	440
Jackson			
Jefferson	78	756	2,859
LaFayette	96	873	1,846
Lake	67	1,138	1,729
Lee	105	200	2,465
Leon	223	1,070	6,260
Levy	47	520	1,474
Liberty			
Madison	41	80	740
Manatee	83	527	1,075
Marion	120	1,165	4,094
*Monroe			
Nassau			
Okaloosa	13	122	488
Okeechobee	57	1,636	1,858
Orange	266	306	1,099
Osceola	6	50	160
Palm Beach	6	450	1,000
Pasco	99	917	2,963
*Pinellas			
Polk	150	450	900
Putnam	115	1,005	2,826
Santa Rosa	411	2,501	8,786
*Seminole			
St. Johns	1	50	100
*St. Lucie			
*Sumter			
Suwannee	95	620	1,530
Taylor	28	475	1,600
Volusia	411	2,613	8,265
Wakulla	20	100	300
Walton	27	257	770
Washington	224	2,914	9,053
Total	4,693	43,525	127,178

*Not reported.

AGRICULTURAL STATISTICS OF SOY BEANS.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford	40	200	400
Brevard	2	40	80
Broward			
Calhoun			
*Citrus			
Clay	15	150	180
Columbia			
Dade			
DeSoto	1	30	90
Duval	25	15	45
Escambia	9	90	300
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	80	257	1,372
Holmes			
Jackson	3,060	6,862	
Jefferson			
LaFayette			
Lake	2	40	40
Lee			
Leon	6	36	82
Levy	2	30	60
Liberty			
Madison			
Manatee			
Marion	2	21	54
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola	3	40	120
Palm Beach			
Pasco			
*Pinellas			
Polk	3	30	180
Putnam			
Santa Rosa	1	47	110
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	3	40	88
Taylor			
Volusia	27	200	640
Wakulla			
Walton	3	50	100
Washington			
Total	3,284	8,178	3,941

*Not reported.

AGRICULTURAL STATISTICS OF VELVET BEAN HAY.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua	9,273	139,460	141,530
Baker			
*Bay			
Bradford			
Brevard	10	15	120
Broward			
Calhoun			
*Citrus			
Clay	10	6	150
Columbia			
*Dade			
DeSoto			
Duval	2	4	80
Escambia	1,778	1,551	35,248
*Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando	7	10	300
Hillsborough	177	273	7,995
Holmes	33	23	460
Jackson			
Jefferson	31	12	330
LaFayette			
Lake			
Lee			
Leon	67	132	4,380
Levy	104	155	3,135
Liberty			
Madison	64	25	565
Manatee			
Marion	20	20	600
*Monroe			
Nassau			
Okeechobee			
Okaloosa			
Orange			
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk			
Putnam	4	4	120
Santa Rosa	172	164	8,570
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla	12	10	440
Walton			
Washington	1	1	20
Total	11,765	141,865	199,043

*Not reported.

AGRICULTURAL STATISTICS OF FIELD PEA HAY.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua	155	95	2,950
Baker	24	22	880
Bay			
Bradford	183	107	3,240
Brevard	6	5	75
Broward			
Calhoun	11	11	280
*Citrus			
Clay	53	53	1,322
Columbia			
Dade			
DeSoto	145	304	10,439
Duval	173	165	3,178
Escambia	86	81	2,200
Flagler			
Franklin	15	30	457
*Gadsden			
Hamilton	53	59	1,116
Hernando	67	69	1,180
Hillsborough	178	245	6,350
Holmes	3	6	120
Jackson	108	194	1,659
Jefferson	747	594	9,403
LaFayette	32	19	1,040
Lake	51	41	1,345
Lee			
Leon	223	1,070	6,260
Levy	56	340	1,625
Liberty			
Madison	1,270	935	34,900
Manatee	8	37	230
*Marion	248	1,022	27,105
Manatee	8	37	230
Marion	248	1,022	27,105
Monroe			
Nassau	75	135	5,420
Okaloosa	1	1	45
Okeechobee	6	6	130
Orange	72	86	1,880
Osceola	10	10	300
Palm Beach	20	15	1,500
Pasco	50	482	5,940
*Pinellas			
Polk	500	500	12,500
Putnam	56	78	1,590
Santa Rosa	327	226	8,605
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	386	247	5,140
Taylor			
Volusia	245	174	5,220
Wakulla	2	2	70
Walton	22	17	505
Washington	89	207	3,581
Total	5,706	7,790	169,772

*Not reported.

AGRICULTURAL STATISTICS OF PARA GRASS HAY.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard			
Broward	50	114	1,310
Calhoun			
*Citrus			
Clay			
Columbia			
*Dade			
DeSoto			
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando	8	13	375
Hillsborough			
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee	110	220	1,030
Leon			
Levy			
Liberty			
Madison			
Manatee			
Marion			
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	75	75	1,500
Osceola			
Palm Beach	20	100	2,000
Pasco			
*Pinellas			
Polk			
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
*Total	263	522	6,215

*Not reported.

AGRICULTURAL STATISTICS OF NATAL GRASS HAY.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford			
Brevard	11	90	1,120
Broward	19	26	578
Calhoun			
*Citrus			
Clay	10	6	167
Columbia			
Dade			
DeSoto	5	9	185
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	2	2	80
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	4,122	4,917	62,750
Lee	2	3	100
Leon			
Levy	74	90	1,900
Liberty			
Madison			
Manatee			
Marion	72	47	1,440
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	58	66	1,320
Osceola			
Palm Beach			
Pasco	82	256	6,580
*Pinellas			
Polk	200	150	3,750
Putnam	8	4	90
Santa Rosa	9	10	350
*Seminole			
St. Johns	5,863	7,424	149,020
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	35	45	1,300
Wakulla			
Walton			
Washington			
Total	10,572	13,145	230,730

*Not reported.

AGRICULTURAL STATISTICS OF RHODES GRASS HAY.

COUNTIES.	Acres.	Tons.	Value. Dollars.
Alachua			
Baker			
Bay			
Bradford			
Brevard			
Broward	2	4	75
Calhoun			
*Citrus			
Clay			
Columbia			
Dade	1	3	120
DeSoto			
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough			
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	3	4	100
Lee			
Leon	14	5,314	230
Levy			
Liberty			
Madison			
Manatee			
Marion	24	22	460
Monroe			
Nassau			
Okaloosa			
Okeechobee	31	5	110
Orange			
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk	2	2	50
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	2	3	90
Total	51	5,357	1,235

*Note reported.

AGRICULTURAL STATISTICS OF MILLET.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford		1	
Brevard	1	4	30
Broward	1		80
Calhoun			
*Citrus	1	1	24
Clay	3	4	280
Columbia			
Dade	6	2	95
DeSoto			
Duval	3	2	60
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	9	5	100
Holmes			
Jackson			
Jefferson			
Lafayette			
Lake			
Lee	4	8	160
Leon			
Levy			
Liberty			
Madison			
Manatee	1	5	100
Marion	7	12	353
Monroe			
Nassau			
Okaloosa	1	3	45
Okeechobee	1	5	75
Orange			
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk			
Putnam			
Santa Rosa	2	8	120
*Seminole			
St. Johns	3	10	200
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	27	29	840
Wakulla			
Walton			
Washington			
Total	70	94	2,564

*Not reported.

AGRICULTURAL STATISTICS OF CASSAVA.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford			
Brevard			
Broward			
Calhoun			
*Citrus			
Clay			
Columbia			
Dade			
DeSoto	2	11	450
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	9	26	1,140
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	3	32	90
Lee	1	10	200
Leon			
Levy			
Liberty			
Madison			
Manatee			
Marion	16	71	1,345
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	5	31	325
Osceola			
Palm Beach			
Pasco	1	2	60
*Pinellas			
Polk	100	1,000	20,000
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	137	1,183	23,610

*Not reported.

AGRICULTURAL STATISTICS OF RYE.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford	152	1,565	4,535
Brevard			
Broward			
Calhoun			
Citrus			
Clay	4	10	35
Dade			
DeSoto			
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton	10	80	180
Hernando			
Hillsborough			
Holmes			
Jackson			
Jefferson	60	700	2,800
LaFayette			
Lake			
Lee			
Leon	9	70	200
Levy			
Liberty			
Madison	200	1,000	3,000
Manatee			
Marion	24	100	420
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach	10	200	400
Pasco	1	25	50
*Pinellas			
Polk			
Putnam	2	40	80
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	16	20	180
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	488	3,750	11,860

*Not reported.

AGRICULTURAL STATISTICS OF HAY—NATIVE GRASSES.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua	2,000	1,205	29,585
Baker	115	114	940
*Bay . . . . .	.....	.....	.....
Bradford	895	705	19,585
Brevard	10	10	150
Broward	10	10	150
Calhoun	100	120	3,590
*Citrus . . . . .	.....	.....	.....
Clay	444	343	8,754
Columbia	1,088	2,611	41,652
*Dade . . . . .	.....	.....	.....
DeSoto . . . . .	.....	.....	.....
Duval	51	50	940
Escambia	1,196	1,087	25,450
*Flagler . . . . .	.....	.....	.....
Franklin . . . . .	.....	.....	.....
*Gadsden . . . . .	.....	.....	.....
Hamilton	2	4	60
Hernando	18	23	350
Hillsborough	1,386	1,349	33,763
Holmes	1,982	826	16,530
Jackson	3,468	4,340	26,028
Jefferson	660	440	9,539
LaFayette . . . . .	.....	.....	.....
Lake	847	992	2,073
Lee	55	52	2,520
Leon	401	233	8,080
Levy	376	414	9,106
Liberty . . . . .	.....	.....	.....
Madison	397	1,731	5,787
Manatee	41	42	1,080
Marion	2,856	2,027	56,505
*Monroe . . . . .	.....	.....	.....
Nassau	324	430	9,305
Okaloosa	2	362	8,115
Okeechobee	20	21	420
Orange	1,657	1,665	34,094
Osceola	523	460	18,440
Palm Beach	224	364	4,202
Pasco	104	402	10,510
*Pinellas . . . . .	.....	.....	.....
Polk	1,000	1,500	30,000
Putnam	849	956	25,435
Santa Rosa	261	179	6,320
*Seminole . . . . .	.....	.....	.....
St. Johns . . . . .	.....	.....	.....
*St. Lucie . . . . .	.....	.....	.....
*Sumter . . . . .	.....	.....	.....
Suwannee	40	25	870
Taylor . . . . .	.....	.....	.....
Volusia	1,048	788	26,640
Wakulla	8	6	120
Walton	480	294	5,085
Washington	63	97	2,383
Total	25,242	24,353	502,796

*Not reported.

AGRICULTURAL STATISTICS OF VELVET BEANS.

COUNTIES.	Acres.	Busbels.	Value Dollars.
Alachua			
Baker	909	8,195	20,150
*Bay			
Bradford			
Brevard	1,491	6,280	27,310
Broward	9	194	347
Calhoun	1,493	19,360	19,360
*Citrus			
Clay	568	514	7,647
Columbia	230	1,900	3,450
*Dade			
DeSoto	285	2,400	7,430
Duval	19	570	1,240
Escambia			
*Flagler			
Franklin			
*Gadsden			
Hamilton	1,360	9,734	14,116
Hernando	388	7,870	8,325
Hillsborough	151	775	1,540
Holmes	10,338	84,834	339,336
Jackson	12,882	157,560	113,077
Jefferson	3,402	25,615	49,464
LaFayette	1,552	16,616	31,902
Lake	85	460	493
Lee	62	35	70
Leon	4,851	44,508	85,736
Levy	425	3,325	10,180
Liberty	800	1,600	300
Madison	448	2,347	10,836
Manatee	22	185	330
Marion	3,155	12,484	47,002
*Monroe			
Nassau	114	936	2,869
Okaloosa	58	26,131	59,180
Okeechobee	13	185	355
Orange	270	607	1,516
Osceola	21	260	340
Palm Beach			
Pasco	957	9,185	28,245
*Pinella			
Polk	200	2,000	4,000
Putnam	254	2,145	5,280
Santa Rosa	2,482	28,197	45,153
*Seminole			
St. Johns	15	600	1,800
*St. Lucie			
*Sumter			
Suwannee	1,888	12,090	23,038
Taylor	561	6,160	10,290
Volusia	1,360	8,380	24,945
Wakulla	429	4,290	4,290
Walton	3,780	3,489	6,979
Washington	5,409	52,292	118,776
Total	63,126	577,478	1,136,727

*Not reported.

AGRICULTURAL STATISTICS OF JAPANESE CANE.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford	50	250	1,000
Brevard	10	74	972
Broward			
Calhoun	2	4	200
*Citrus			
Clay	60	89	3,531
Columbia	34	26	2,145
*Dade			
DeSoto	7	18	310
Duval	5	11	260
Escambia	1	4	80
Flagler			
Franklin			
*Gadsden			
Hamilton	1	35	35
Hernando	61	694	2,970
Hillsborough	160	832	13,158
Holmes	1	4	100
Jackson			
Jefferson	4	144	578
LaFayette	1	8	120
Lake	4	22	120
Lee	47	795	7,397
Leon	78	547	6,880
Levy	3	3	210
Liberty	300	500	6,000
Madison	2	40	600
Manatee	9	16	345
Marion	110	487	8,965
*Monroe			
Nassau	7	140	770
Okaloosa			
Okeechobee	1	5	100
Orange	11	35	975
Osceola	1	10	100
Palm Beach	6	100	4,000
Pasco	148	2,700	53,580
*Pinellas			
Polk	50	75	1,500
Putnam	9	132	1,932
Santa Rosa	17	123	2,760
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	1	5	140
Taylor	4	9	250
Volusia	17	36	500
Wakulla			
Walton	19	380	3,248
Washington	4	6	80
Total	1,239	8,269	125,909

*Not reported.

AGRICULTURAL STATISTICS OF KAFFIR CORN.

COUNTIES.	Acres.	Tons.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford			
Brevard			
Broward	20	50	400
Calhoun			
*Citrus			
Clay	2	2	50
Columbia			
Dade	2	2	100
DeSoto			
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	1	10	250
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee	11	20	400
Leon			
Levy			
Liberty			
Madison			
Manatee			
Marion	2	6	150
Monroe			
Nassau			
Okaloosa			
Okeechobee	4	48	120
Orange	1	4	80
Osceola			
Palm Beach	10	300	900
Pasco			
*Pinellas			
Polk	3	3	75
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	56	445	2,525

*Not reported.

AGRICULTURAL STATISTICS OF PEANUTS.

COUNTIES	Acres	Bush.	Value Dollars
Alachua	26,410	587,587	571,528
Baker	4,088	33,199	33,199
*Bay			
Bradford	16,457	149,840	148,335
Brevard			
Broward	1	20	40
Calhoun	9,299	92,135	92,135
*Citrus			
Clay	79	536	1,912
Columbia	10,839	100,839	108,390
*Dade			
DeSoto	30,553	130,683	288,535
Duval	14	152	458
Escambia	273	8,130	16,155
*Flagler			
Franklin			
*Gadsden			
Hamilton	9,720	245,738	309,901
Hernando	809	28,405	28,875
Hillsborough	495	4,636	11,851
Holmes	10,279	209,330	418,660
Jackson	42,168	432,897	316,600
Jefferson	7,986	138,876	138,876
LaFayette	8,062	218,882	491,815
Lake	236	1,408	3,880
Lee	64	210	1,950
Leon	3,076	53,440	105,615
Levy	7,916	133,291	224,397
Liberty	140	3,180	6,000
Madison	1,358	20,838	42,912
Manatee			
Marion	11,291	242,552	266,974
*Monroe			
Nassau	616	11,415	23,160
Okaloosa	278	3,876	8,140
Okeechobee	21	370	945
Orange	8	20	80
Osceola			
Palm Beach			
Pasco	575	5,415	20,425
*Pinellas			
Polk	250	5,000	12,500
Putnam	315	5,380	13,300
Santa Rosa	905	19,053	27,281
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee	31,485	335,251	428,251
Taylor	1,509	15,930	15,930
Volusia	483	4,460	13,495
Wakulla	2,488	49,760	49,760
Walton	3,865	72,168	72,168
Washington	6,526	71,192	130,539
Total	250,935	3,436,092	4,444,967

*Not reported.

AGRICULTURAL STATISTICS OF SWEET POTATOES.

COUNTIES	Acres.	Bushels.	Value Dollars.
Alachua	1,855	206,598	206,598
Baker	351	41,140	41,140
*Bay			
Bradford	1,542	157,779	163,114
Brevard	73	8,170	18,688
Broward	3	200	800
Calhoun	311	23,067	23,067
*Citrus			
Clay	263	30,175	66,322
Columbia	223	2,600	2,600
Dade			
DeSoto	819	128,411	146,845
Duval	680	40,848	88,297
Escambia	738	55,347	56,266
*Flagler			
Franklin	77	15,550	15,550
*Gadsden			
Hamilton	424	67,033	67,033
Hernando	159	19,832	22,195
Hillsborough	439	44,416	123,793
Holmes	618	55,379	55,379
Jackson	1,598	163,620	141,873
Jefferson	1,458	121,111	121,111
LaFayette	191	30,847	30,847
Lake	206	13,713	22,785
Lee	275	43,576	105,683
Leon	2,117	209,085	209,085
Levy	435	41,069	41,069
Liberty	200	4,550	3,000
Madison	1,076	118,425	118,425
Manatee	219	19,280	35,965
Marion	820	81,374	82,738
*Monroe			
Nassau	819	116,735	231,100
Okaloosa	540	64,962	64,962
Okeechobee	115	12,325	15,921
Orange	322	34,374	79,101
Osceola	263	37,720	75,440
Palm Beach	78	13,260	27,465
Pasco	293	33,691	67,382
*Pinellas			
Polk	1,200	60,000	120,000
Putnam	341	45,255	65,509
Santa Rosa	1,010	109,677	112,478
*Seminole			
St. Johns	1,668	89,265	156,883
*St. Lucie			
*Sumter			
Suwannee	544	78,521	82,295
Taylor	151	21,900	3,700
Volusia	949	58,110	116,220
Wakulla	199	21,030	21,030
Walton	750	64,144	92,461
Washington	449	41,971	43,146
Total	25,311	2,644,135	3,385,161

*Not reported.

AGRICULTURAL STATISTICS OF IRISH POTATOES.

COUNTIES.	Acres	Bushels	Value Dollars
Alachua	147	15,509	30,872
Baker	15	320	850
*Bay			
Bradford	13	624	1,687
Breard	34	1,452	6,046
Broward	31	3,455	9,385
Calhoun			
*Citrus			
Clay	291	27,698	54,693
Columbia			
Dade			
DeSoto	2,554	163,537	402,480
Duval	74	3,062	8,960
Escambia	37	1,894	6,960
Flagler			
Franklin	25	2,575	7,725
*Gadsden			
Hamilton			
Hernando	79	9,890	13,022
Hillsborough	543	50,413	163,970
Holmes	2	75	320
Jackson	5	110	210
Jefferson	2	135	130
LaFayette	1	65	210
Lake	25	1,610	2,905
Lee	11	955	3,835
Leon	13	886	3,384
Levy	2	72	177
Liberty			
Madison			
Manatee	6	580	1,250
Marion	67	5,537	12,899
*Monroe			
Nassau	16	1,280	1,800
Okaloosa			
Okeechobee	16	1,010	2,545
Orange	109	10,623	
Osceola	195	33,035	116,385
Palm Beach	567	58,975	106,918
Pasco	26	1,945	3,372
*Pinellas			
Polk	503	20,000	60,000
Putnam	2,729	201,602	505,680
Santa Rosa	28	2,345	6,645
*Seminole			
St. Johns	14,591	590,300	4,455,920
*St. Lucie			
*Sumter			
Suwannee	6	500	800
*Taylor			
Volusia	725	6,935	162,960
Wakulla			
Walton			
Washington	2	106	290
Total	23,481	1,319,110	6,586,511

*Not reported.

AGRICULTURAL STATISTICS OF CABBAGE.

COUNTIES	Acres	Crates	Value Dollars
Alachua	443	53,795	87,965
Baker			
Bay			
Bradford	10	1,000	3,000
Brevard	2	115	550
Broward	796	56,245	98,550
Calhoun			
*Citrus			
Clay	12	107	1,499
Columbia			
Dade			
DeSoto	591	58,514	101,548
Duval	34	2,835	8,968
Escambia			
Flagler			
Franklin	22	450	13,500
*Gadsden			
Hamilton			
Hernando	29	1,575	2,840
Hillsborough	400	73,667	14,918
Holmes	2	34	250
Jackson	1	20	20
Jefferson			
LaFayette			
Lake	229	26,050	34,090
Lee	28	2,100	63,373
Leon	6	350	1,150
Levy	2	575	820
Liberty			
Madison	2	200	700
Manatee	724	127,375	218,025
Marion	508	44,259	73,375
*Monroe			
Nassau	2	400	500
Okaloosa			
Okeechobee			
Orange	391	89,297	89,246
Osceola	31	134,485	20,475
Palm Beach	752	180,100	322,850
Pasco	10	1,235	3,565
*Pinellas			
Polk	1,200	132,000	165,000
Putnam	6	420	1,195
Santa Rosa	19	954	2,649
*Seminole			
St. Johns	16	3,160	9,480
*St. Lucie			
*Sumter			
Suwannee	5	400	250
Taylor			
Volusia	114	12,885	39,210
Wakulla			
Walton			
Washington			
Total	6,390	1,002,599	1,359,566

*Not reported.

AGRICULTURAL STATISTICS OF WATERMELONS.

COUNTIES.	Acres.	Carload.	Value Dollars.
Alachua	1,409	294	54,440
Baker			
*Bay			
Bradford	156	42	4,410
Brevard	12	8	1,046
Broward			
Calhoun	42	16	2,705
*Citrus			
Clay	70	11	4,050
Columbia	53	5	5,500
*Dade			
DeSoto	1,098	439	108,805
Duval	19	6	1,400
Escambia	10	8	740
*Flagler			
Franklin	21	43	1,720
*Gadsden			
Hamilton	10	4	800
Hernando	750	272	55,525
Hillsborough	318	103	13,979
Holmes	46	17	2,720
Jackson	252	81	11,050
Jefferson	1,064	174	30,477
LaFayette	78	9	3,100
Lake	1,453	314	135,047
Lee	67	9	5,775
Leon	587	174	24,079
Levy	490	144	17,967
Liberty			
Madison	195	49	8,000
Manatee	29	8	3,300
Marion	1,238	289	96,050
Monroe			
Nassau			
Okaloosa	10	3	600
Okeechobee	14	8	1,700
Orange	478	174	25,105
Osceola			
Palm Beach	12	2	30
Pasco	249	95	23,975
*Pinellas			
Polk	2,000	666	333,000
Putnam	104	34	8,200
Santa Rosa	80	30	7,495
*Seminole			
*St. Johns	32	42	6,375
*St. Lucie			
*Sumter			
Suwannee	2,526	343	85,565
Taylor	45	4	200
Volusia	332	132	24,495
Wakulla			
Walton	7	1	100
Washington	8	6	623
Total	15,352	4,059	1,100,248

*Not reported.

AGRICULTURAL STATISTICS OF TOMATOES.

COUNTIES	Acres	Crates	Value Dollars
Alachua	20	2,050	4,350
Baker			
*Bay	8	1,250	9,475
Bradford	9	1,202	3,155
Brevard	1,432	53,233	129,231
Broward			
Calhoun			
*Citrus	1	130	290
Clay			
Columbia			
Dade	634	54,048	137,919
DeSoto	18	12,051	2,691
Duval	1	120	580
Escambia			
*Flagler	10	630	1,890
Franklin			
*Gadsden			
Hamilton	60	3,746	6,412
Hernando	273	25,535	50,214
Hillsborough	1	54	192
Holmes			
Jackson	1	65	65
Jefferson			
LaFayette			
Lake	83	7,365	16,265
Lee	83	18,140	25,320
Leon	1	100	200
Levy	3	327	479
Liberty			
Madison			
Manatee	807	102,729	228,585
Marion	465	69,061	82,515
Monroe			
Nassau			
Okaloosa			
Okeechobee	13	1,150	2,350
Orange	347	24,248	43,305
Osceola			
Palm Beach	1,042	317,150	659,480
Pasco	12	845	1,200
*Pinellas			
Polk	125	6,250	12,500
Putnam	4	270	700
Santa Rosa	37	2,500	6,976
*Seminole			
St. Johns	8	2,010	5,280
*St. Lucie			
*Sumter			
Suwannee	4	350	800
Taylor			
Volusia	76	6,340	14,420
Wakulla			
Walton			
Washington			
Total	5,578	682,103	1,416,787

*Not reported.

AGRICULTURAL STATISTICS OF STRING BEANS.

COUNTIES.	Acres.	Crates.	Value Dollar.
Alachua	298	27,426	39,282
Baker			
*Bay			
Bradford	23	4,071	2,123
Brevard	13	1,535	4,387
Broward	168	10,805	19,775
Calhoun			
*Citrus			
Clay	4	293	330
Columbia			
*Dade			
DeSoto	199	19,085	28,455
Duval	8	408	677
Escambia			
*Flagler			
Franklin	7	435	870
*Gadsden			
Hamilton			
Hernando	3	160	270
Hillsborough	576	38,157	62,207
Holmes			
Jackson	1	50	150
Jefferson			
LaFayette	192	6,912	15,295
Lake	1	40	135
Lee	8	600	1,100
Leon			
Levy			
Liberty			
Madison			
Manatee	34	2,065	3,945
Marion	1,057	67,997	78,158
*Monroe			
Nassau			
Okaloosa			
Okeechobee	2	194	975
Orange	18	1,209	1,557
Osceola	1	150	800
Palm Beach	456	148,200	98,900
Pasco	32	1,690	3,685
*Pinellas			
Polk	200	15,000	15,000
Putnam	72	3,966	8,885
Santa Rosa	9	506	1,455
*Seminole			
St. Johns	1	40	120
*St. Lucie			
*Sumter			
Taylor			
Volusia	15	1,090	3,190
Wakulla			
Walton			
Washington			
Total	3,398	352,084	391,706

*Not reported.

AGRICULTURAL STATISTICS OF CUCUMBERS.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua	605	59,685	73,684
Baker	8	1,402	1,073
*Bay	8	715	1,000
Bradford	1	140	160
Brevard	441	43,540	75,419
Calhoun	2	150	350
*Citrus	5	300	300
Clay	18	1,490	3,887
Columbia	126	13,698	22,159
*Dade	95	24,575	26,088
DeSoto	23	1,582	4,619
Duval	1	150	300
Escambia	1,386	127,769	121,361
*Flagler	71	12,110	19,070
Franklin	316	30,103	39,900
*Gadsden	1	40	90
Hamilton	9	651	1,305
Hernando	4	1,175	3,475
Hillsborough	1	108	225
Holmes	8	1,000	1,585
Jackson			
Jefferson			
LaFayette			
Lake			
Lee			
Leon			
Levy			
Liberty			
Madison			
Manatee			
Marion			
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	1,491	97,756	176,180
Osceola	1	100	500
Palm Beach	2	200	600
Pasco	8	1,150	2,300
*Pinellas	15	1,665	2,081
Polk	1	40	90
Putnam	9	651	1,305
Santa Rosa	4	1,175	3,475
*Seminole	1	108	225
St. Johns	8	1,000	1,585
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	4,654	421,429	579,481

*Not reported.

AGRICULTURAL STATISTICS OF ONIONS.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford	5	3,025	6,100
Brevard	8	485	850
Broward			
Calhoun			
*Citrus			
Clay	2	111	348
Columbia			
Dade			
DeSoto	86	11,014	23,160
Duval	5	202	540
Escambia			
Flagler			
Franklin	7	750	1,500
*Gadsden			
Hamilton			
Hernando			
Hillsborough	9	781	2,114
Holmes	1	7	42
Jackson			
Jefferson	1	30	30
LaFayette			
Lake	1	95	200
Lee	1	260	520
Leon	6	850	2,000
Levy	1	116	184
Liberty			
Madison			
Manatee	1	25	100
Marion	4	582	1,295
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	8	792	1,605
Osceola			
Palm Beach	168	31,770	80,800
Pasco	1	30	60
*Pinellas			
Polk	20	1,500	2,250
Putnam	2	231	413
Santa Rosa	8	360	1,040
*Seminole			
St. Johns	7	800	2,500
*St. Lucie			
*Sumter			
Suwannee	1	150	245
Taylor			
Volusia	23	2,865	5,460
Wakulla			
Walton			
Washington			
Total	376	66,831	183,356

*Not reported.

AGRICULTURAL STATISTICS OF LETTUCE.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua	135	15,810	28,750
Baker			
*Bay			
Bradford	1	40	250
Brevard	3	160	600
Broward	1	150	400
Calhoun			
*Citrus			
Clay	3	116	45
Columbia			
*Dade			
DeSoto	26	750	1,480
Duval	2	68	316
Escambia			
*Flagler			
Franklin	4	775	1,700
*Gadsden			
Hamilton			
Hernando			
Hillsborough	48	8,262	17,556
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee	1	100	160
Leon			
Levy			
Liberty			
Madison			
Manatee	652	137,200	243,300
Marion	138	26,382	43,736
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	345	108,160	124,078
Osceola	1	20	650
Palm Beach	15	2,480	5,400
Pasco			
*Pinellas			
Polk	75	73,350	110,025
Putnam	1	71	165
Santa Rosa	2	200	370
*Seminole			
St. Johns	1	12	36
*St. Lucie			
*Sumter			
Taylor			
Volusia	43	4,910	5,500
Wakulla			
Walton			
Washington			
Total	1,497	379,016	584,517

*Not reported.

AGRICULTURAL STATISTICS OF LIMA BEANS.

VOUNTIES.	Acres.	Crates.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard			
Broward	2	50	150
Calhoun			
*Citrus			
Clay	1	65	80
Columbia			
*Dade			
DeSoto	8	605	1,460
Duval	3	42	346
Escambia			
*Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	20	219	1,171
Holmes			
Jackson			
Jefferson	1	50	150
LaFayette			
Lake			
Lee			
Leon			
Levy			
Liberty			
Madison			
Manatee	1	4	50
Marion			
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk			
Putnam			
Santa Rosa			
*Seminole			
St. Johns	1	50	150
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	4	280	580
Wakulla			
Walton			
Washington			
Total	41	1,365	4,137

*Not reported.

AGRICULTURAL STATISTICS OF EGG PLANTS.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua	27	4,150	7,200
Baker			
Bay			
Bradford			
Brevard	9	1,100	1,500
Broward			
Calhoun			
*Citrus			
Clay	1	50	60
Columbia			
Dade			
DeSoto	110	8,995	17,805
Duval			
Escambia			
*Flagler	1	70	70
Franklin			
*Gadsden			
Hamilton			
Hernando	22	1,520	2,615
Hillsborough	13	1,419	3,196
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	11	670	2,210
Lee	41	9,850	14,850
Leon	1	200	400
Levy	38	2,255	2,044
Liberty			
Madison			
Manatee	150	43,700	61,500
Marion	1	70	95
Monroe			
Nassau			
Okaloosa	1	100	200
Okeechobee	1	400	600
Orange	2	300	1,500
Osceola	244	52,564	182,850
Palm Beach	3	225	650
Pasco			
*Pinellas			
Polk	30	3,750	3,750
Putnam	1	50	100
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	4	605	1,790
Wakulla			
Walton			
Washington			
Total	711	132,043	304,985

*Not reported.

AGRICULTURAL STATISTICS OF CANTALOUPE.

COUNTIES.	Acre.	Crates.	Dollars.
Alachua	75	1,000	2,500
Baker			
*Bay			
Bradford	2	200	200
Brevard	1	25	50
Broward			
Calhoun			
*Citrus			
Clay			
Columbia			
*Dade			
DeSoto	12	550	1,150
Duval	1	50	100
Escambia			
*Flagler			
Franklin	10	2,150	6,450
*Gadsden			
Hamilton			
Hernando			
Hillsborough	2	70	200
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	8	500	500
Lee			
Leon	1	40	82
Levy	2	400	400
Liberty			
Madison			
Manatee			
Marion	896	12,859	17,320
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	3	50	100
Osceola	5	100	200
Palm Beach			
Pasco			
*Pinellas			
Polk	4	80	240
Putnam	1	50	150
Santa Rosa	13	470	1,426
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	5	380	600
Wakulla			
Walton			
Washington			
Total	1,041	18,974	31,668

*Not reported.

AGRICULTURAL STATISTICS OF ENGLISH PEAS.

.. COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard			
Broward	7	310	775
Calhoun			
*Citrus			
Clay	1	120	360
Columbia			
*Dade			
DeSoto	26	1,951	5,112
Duval			
Escambia			
*Flagler			
Franklin	1	60	120
*Gadsden			
Hamilton			
Hernando			
Hillsborough	3	112	346
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	10	355	1,125
Lee	1	35	100
Leon			
Levy			
Liberty			
Madison			
Manatee			
Marion	24	421	1,041
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	3	250	682
Osceola			
Palm Beach			
Pasco	1	20	60
*Pinellas			
Polk	10	400	1,800
Putnam	1	120	460
Santa Rosa	2	30	95
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	9	455	1,150
Wakulla			
Walton			
Washington			
Total	99	6,439	18,026

*Not reported.

AGRICULTURAL STATISTICS OF BEETS.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua	30	2,460	9,490
Baker			
*Bay			
Bradford	1	100	200
Brevard			
Broward			
Calhoun			
*Citrus			
Clay	2	90	340
Columbia			
*Dade			
DeSoto			
Duval			
Escambia			
*Flagler			
Franklin	2	150	300
*Gadsden			
Hamilton			
Hernando			
Hillsborough	3	336	633
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee	1	50	100
Leon	10	1,050	1,100
Levy	15	300	350
Liberty			
Madison			
Manatee	5	1,175	1,225
Marion	3	275	550
*Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	2	425	615
Osceola			
Palm Beach	9	1,900	3,600
Pasco			
*Pinellas			
Polk	10	300	300
Putnam			
Santa Rosa	1	120	120
*Seminole			
St. Johns	1	10	30
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	10	1,390	2,155
Wakulla			
Walton			
Washington			
Total	108	10,206	21,468

*Net reported.

AGRICULTURAL STATISTICS OF SQUASHES.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford	2	1,100	1,100
Brevard	4	140	225
Broward			
Calhoun			
*Citrus			
Clay	1	80	80
Columbia			
Dade			
DeSoto	29	1,535	3,480
Duval	1	100	125
Escambia			
*Flagler			
Franklin	3	315	315
*Gadsden			
Hamilton			
Hernando	10	200	350
Hillsborough	90	6,357	12,405
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	31	2,835	2,320
Lee	2	250	375
Leon			
Levy	1	36	34
Liberty			
Madison			
Manatee	39	2,700	2,850
Marion	27	2,815	2,976
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	3	465	790
Osceola			
Palm Beach	2	300	750
Pasco	6	325	525
*Pinellas			
Polk	15	660	825
Putnam	1	20	20
Santa Rosa	9	600	900
*Seminole			
St. Johns	1	13	390
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	7	790	1,070
Wakulla			
Walton			
Washington			
Total	284	21,636	31,930

*Not reported.

AGRICULTURAL STATISTICS OF PEPPER.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua	35	3,950	7,700
Baker			
*Bay			
Bradford			
Brevard	4	487	1,056
Broward	126	12,070	23,580
Calhoun			
*Citrus			
Clay	6	1,100	4,400
Columbia			
*Dade			
DeSoto	311	25,710	49,300
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	46	5,080	17,825
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	1	250	550
Lee	682	155,996	135,600
Leon	1	200	400
Levy			
Liberty			
Madison			
Manatee	198	27,120	44,350
Marion	3	280	470
Monroe			
Nassau			
Okaloosa	2	140	300
Okeechobee	16	4,458	8,585
Orange	1	250	500
Osceola	707	129,556	383,090
Palm Beach	12	1,050	2,300
Pasco			
*Pinellas			
Polk	20	3,040	6,080
Putnam	1	140	270
Santa Rosa			
*Seminole			
St. Johns	2	160	480
*St. Lucie			
*Sumter			
Suwannee	3	210	420
Taylor			
Volusia	18	1,375	4,410
Wakulla			
Walton			
Washington			
Total	2,195	372,572	692,266

*Not reported.

AGRICULTURAL STATISTICS OF ROMAINE.

COUNTIES.	Acres.	Crates	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard	1	60	180
Broward			
Calhoun			
*Citrus			
Clay			
Columbia			
*Dade			
DeSoto	3	500	950
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	1	30	60
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake	6	600	750
Lee	1	90	100
Leon			
Levy			
Liberty			
Madison			
Madison			
Manatee	9	2,860	4,450
Marion	2	750	850
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange	3	950	1,600
Osceola			
Palm Beach			
Pasco			
*Pinellas			
Polk			
Putnam			
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia			
Wakulla			
Walton			
Washington			
Total	26	5,840	8,940

*Not reported.

AGRICULTURAL STATISTICS OF CELERY.

COUNTIES.	Acres.	Crates.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard	6	120	756
Broward	1	300	600
Calhoun			
*Citrus			
Clay			
Columbia			
Dade			
DeSoto			
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough	45	22,520	54,165
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee			
Leon			
Levy			
Liberty			
Madison			
Manatee	208	52,900	106,025
Marion			
Monroe			
Nassau			
Okaloosa			
Okeechobee			
Orange			
Osceola	1	190	807
Palm Beach	5	380	1,050
Pasco			
*Pinellas			
Polk	25	2,500	3,750
Putnam			
Santa Rosa			
*Seminole			
St. Johns	1	15	45
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	20	3,120	5,500
Wakulla			
Walton			
Washington			
Total	312	82,045	172,612

*Not reported.

AGRICULTURAL STATISTICS OF DASHEENS.

COUNTIES.	Acres.	Bushels.	Value Dollars.
Alachua			
Baker			
Bay			
Bradford			
Brevard	3	415	760
Broward			
Calhoun			
*Citrus			
Clay			
Columbia			
Dade			
DeSoto	40	5,800	12,600
Duval			
Escambia			
Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando	2	150	100
Hillsborough	4	238	905
Holmes			
Jackson			
Jefferson			
LaFayette			
Lake			
Lee			
Leon	1	20	40
Levy			
Liberty			
Madison			
Manatee			
Marion	1	40	80
Monroe			
Nassau	13	2,430	4,705
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach	166	1,350	2,000
Pasco	3	270	340
*Pinellas			
Polk	4	200	350
Putnam	3	300	660
Santa Rosa			
*Seminole			
St. Johns			
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	4	445	1,320
Wakulla			
Walton			
Washington			
Total	244	11,688	23,860

*Not reported.

AGRICULTURAL STATISTICS—STRAWBERRIES.

COUNTIES.	Acres.	Quarts.	Value Dollar.
Alachua			
Baker			
*Bay	205	494,710	63,349
Bradford	1	350	188
Brevard	8	3,300	840
Broward			
Calhoun			
*Citrus	9	33,469	7,502
Clay			
Columbia			
*Dade	5	6,150	5,344
DeSoto	2	54	180
Duval			
Escambia			
*Flagler			
Franklin			
*Gadsden	1	32	10
Hamilton			
Hernando			
Hillsborough	448	1,131,899	415,642
Holmes			
Jackson	2	397	165
Jefferson			
LaFayette	1	75	100
Lake			
Lee	1	225	87
Leon			
Levy			
Liberty			
Madison			
Manatee			
Marion			
*Monroe			
Nassau	3	5,200	1,054
Okaloosa			
Okeechobee			
Orange			
Osceola			
Palm Beach			
Pasco	4	6,175	1,705
*Pinellas			
Polk	350	500,000	150,000
Putnam	5	2,430	1,527
Santa Rosa	1	1,275	459
*Seminole			
St. Johns	13	23,200	4,640
*St. Lucie			
*Sumter			
Suwannee	3	750	150
Taylor			
Volusia	24	39,650	12,330
Wakulla			
Walton			
Washington	1	340	88
Total	1,087	2,249,681	665,308

*Not reported.

AGRICULTURAL STATISTICS OF PINEAPPLES AND BANANAS.

COUNTIES.	PINEAPPLES.		BANANAS.	
	Crates.	Value Dollars.	Bunches	Value Dollars.
Alachua				
Baker				
*Bay				
Bradford				
Brevard			2,067	2,843
Broward			100	60
Calhoun				
*Citrus				
Clay			1	5
Columbia				
*Dade				
DeSoto	2,901	14,135	304	752
Duval	1	4	154	444
Escambia				
*Flagler				
Franklin			286	286
*Gadsden				
Hamilton				
Hernando			286	346
Hillsborough	40	104	4,713	10,214
Holmes				
Jackson				
Jefferson				
LaFayette				
Lake			112	115
Lee				
Leon				
Levy				
Liberty				
Madison				
Manatee			42	173
Marion			4	13
*Monroe				
Nassau				
Okaloosa				
Okeechobee			175	355
Orange	535	1,600	2,137	2,076
Osceola			96	185
Palm Beach			3,337	3,562
Pasco			1	2
*Pinellas				
Polk			100	100
Putnam				
Santa Rosa				
*Seminole				
St. Johns			54	90
*St. Lucie				
*Sumter				
Suwannee				
Taylor				
Volusia				
Wakulla				
Walton				
Washington				
Total	3,477	15,643	13,949	21,621

*Not reported.

AGRICULTURAL STATISTICS—PECANS.

COUNTIES.	Bearing.	Non-Bearing.	Value.	Bushels.	Value Dollars.
Alachua	6,645	10,945	18,600	1,105	6,205
Baker	1,075	499	300	389	6,185
*Bay					
Bradford	1,903	5,780	29,563	2,269	11,771
Brevard	198	625	4,109	106	788
Broward					
Calhoun		2,050	2,150		
*Citrus					
Clay	1,417	9,149	12,497	423	6,448
Columbia					
*Dade					
DeSoto	4	5	10	4	12
Duval	4,807	5,159	12,571	2,784	27,890
Escambia	3,596	5,344	26,645	1,320	12,438
*Flagler					
Franklin	269	423		807	4,842
*Gadsden					
Hamilton	125	472	1,614	427	5,882
Hernando	6	3,395			
Hillsborough	1,199	5,408	22,647	1,499	16,830
Holmes	1,275	1,233	4,642	482	2,400
Jackson	330	260	899	764	1,635
Jefferson	3,515	17,542	39,418	1,156	13,600
LaFayette	320	140	553	315	1,228
Lake	87	95	265	15	850
Lee	24	2		120	600
Leon	9,825	13,260	37,685	6,724	52,477
Levy	666	966	2,021	683	4,246
Liberty	250	80	4,000		
Madison	257	294	1,409	291	1,660
Manatee	7	62		32	68
Marion	655	652	1,983	261	1,352
*Monroe					
Nassau	2,008	2,943	12,625	1,871	7,484
Okaloosa	2,171	6,206	58,926	4,565	10,916
Okeechobee					
Orange	777	3,533		463	2,369
Osceola	305	93	6,843	156	1,822
Palm Beach					
Pasco					
*Pinellas					
Polk	200	500	2,100	50	1,500
Putnam	3,755	3,395	11,013	351	6,419
Santa Rosa	5,362	3,433	34,132	3,036	21,780
*Seminole					
St. Johns	729	105		1,971	38,056
*St. Lucie					
*Sumter					
Suwannee	5,080	2,997	11,232	4,174	9,441
Taylor	20	19	38	10	40
Volusia	1,746	4,148		797	4,220
Wakulla					
Walton	3,106	89,325			119,538
Washington	1,360	1,265	6,766	2,659	11,722
Total	65,164	201,802	367,256	42,079	414,714

*Not reported..

AGRICULTURAL STATISTICS—PEACHES.

COUNTIES.	Bearing Trees.	Non-Bear Trees.	Bushels.	Value Dollars.
Alachua	155	.....	300	600
Baker	25	25	65	125
*Bay	.....	.....	.....	.....
Bradford	4,518	418	1,846	4,866
Brevard	1,153	1,425	676	5,325
Broward	.....	.....	.....	.....
Calhoun	.....	1,000	.....	.....
*Citrus	.....	.....	.....	.....
Clay	4,774	1,344	3,164	9,980
Columbia	11,739	10,366	3,758	7,625
*Dade	.....	.....	.....	.....
DeSoto	310	149	420	1,038
Duval	1,882	891	2,569	12,035
Escambia	.....	.....	.....	.....
*Flagler	.....	.....	.....	.....
Franklin	1,435	1,228	4,305	17,220
*Gadsden	.....	.....	.....	.....
Hamilton	90	110	115	176
Hernando	280	550	110	260
Hillsborough	3,930	6,261	3,373	18,709
Holmes	3,162	793	2,939	5,546
Jackson	5,029	2,627	7,583	10,931
Jefferson	122	15	131	277
LaFayette	1,206	401	1,439	2,137
Lake	3,545	231	1,702	3,044
Lee	88	15	335	359
Leon	5,014	1,430	6,521	13,991
Levy	806	377	900	2,087
Liberty	.....	150	25	50
Madison	14	20	39	93
Manatee	117	18	239	577
Marion	2,491	412	2,547	7,190
*Monroe	.....	.....	.....	.....
Nassau	811	477	928	6,330
Okaloosa	3,265	2,034	6,511	22,227
Okeechobee	.....	.....	.....	.....
Orange	2,144	8,015	495	1,534
Osceola	40	22	40	30
Palm Beach	.....	.....	.....	.....
Pasco	407	1,920	472	1,022
*Pinellas	.....	.....	.....	.....
Polk	3,000	300	2,700	10,800
Putnam	12,035	8,785	14,743	26,200
Santa Rosa	3,390	836	2,234	3,534
*Seminole	.....	.....	.....	.....
St. Johns	3,363	748	4,670	14,010
*St. Lucie	.....	.....	.....	.....
*Sumter	.....	.....	.....	.....
Suwannee	789	647	1,364	3,268
Taylor	60	.....	80	53
Volusia	17,200	4,005	10,170	12,750
Wakulla	.....	.....	.....	.....
Walton	.....	.....	.....	.....
Washington	2,333	475	4,997	22,056
Total	100,722	58,520	94,495	248,094

*Not reported.

AGRICULTURAL STATISTICS—ORANGES.

COUNTIES.	Bearing Trees.	Non-Bear Trees.	Trees in Nursery	Value.	Crates.	Value Dollars.
Alachua ...	21,634				28,290	32,620
Baker ...						
*Bay ...						
Bradford ...	1,075	28		5,242	1,590	3,100
Brevard ...	329,937	136,730	85,799	643,617	600,295	1,351,306
Broward ...	5,366	7,325	2,750	16,575	1,902	1,225
Calhoun ...	5,200		50,000	500	3,000	15,000
*Citrus ...						
Clay ...	2,102	1,160	100	2,481	2,011	6,475
Columbia ...						
*Dade ...						
DeSoto ...	387,588	346,899	1,026,715	319,815	1,107,572	2,131,586
Duval ...	7,217	3,155	1,000	18,514	8,788	43,845
Escambia ...	609	7,623	9,930	9,905	217	616
*Flagler ...						
Franklin ...	1,012	1,095			2,024	6,072
*Gadsden ...						
Hamilton ...						
Hernando ...	19,350	29,030	0,500	6,650	33,259	51,410
Hillsborough ...	235,687	282,126	245,868	950,809	575,216	1,149,836
Holmes ...	31	17		46	11	45
Jackson ...	120	125		337	207	455
Jefferson ...	25	288		990	25	80
LaFayette ...	97	45		90	222	556
Lake ...	505,213	351,959	688,980	3,730,409	930,788	1,104,665
Lee ...	95,572	47,286	25,230	1,421,600	161,041	472,486
Leon ...	56	31		43	24	92
Levy ...	1,422	190		369	3,266	10,294
Liberty ...	93	50		1,000		
Madison ...						
Manatee ...	57,124	10,455	1,050	50,000	114,255	199,049
Marion ...	67,474	16,703	6,299	73,691	104,151	305,205
*Monroe ...						
Nassau ...	23	76		240	9	38
Okaloosa ...						
Okeechobee ...	8,956	3,914	3,800	10,971	13,131	21,357
Orange ...	521,017	499,334	349,321	125,832	1,080,140	6,536,462
Osceola ...	60,827	6,734	50	319,308	338,664	395,564
Palm Beach ...	16,686	58,878	8,814	54,860	120,384	673,996
Pasco ...	61,813	67,736	116,455	123,191	149,504	299,008
*Pinellas ...						
Polk ...	560,000	700,000	300,000	8,500,000	1,750,000	3,504,000
Putnam ...	158,495	33,901	3,446	2,245,699	282,803	445,751
Santa Rosa ...	2,587	1,554	9,260	19,934	4,606	8,720
St. Johns ...	11,868	2,938			22,254	66,762
*St. Lucie ...						
*Sumter ...						
Suwannee ...						
Taylor ...	2					6
Volusia ...	419,890	213,260	62,900	31,650	432,725	835,390
Wakulla ...						
Walton ...	179	398			159	318
Washington ...	8	6	6	16	3	20
Total ...	3,356,175	2,831,058	3,007,280	18,684,384	7,872,479	19,672,909

*Not reported.

AGRICULTURAL STATISTICS—GRAPEFRUIT.

	Bearing Trees.	Non-Bear- Trees.	Trees in Nursery	Value.	Crates.	Value Dollars.
Alachua	1,200				2,400	4,500
Baker						
*Bay						
Bradford						
Brevard	64,094	53,786	4,251	264,905	117,389	246,981
Broward	9,456	7,302	600	13,832	17,225	28,227
Calhoun	2,000	400				
*Citrus						
Clay	54	37		92	79	310
Columbia						
*Dade						
DeSoto	72,201	52,465	7,020	1,155	199,183	362,100
Duval	107	18	3	330	88	481
Escambia		19	205	105		
*Flagler						
Franklin	314	227			628	2,512
*Gadsden						
Hamilton	8			100	12	36
Hernando	6,929	735			13,172	18,669
Hillsborough	44,738	52,520	2,372	253,694	64,739	124,147
Holmes						
Jackson		18	50	135	3	26
Jefferson	3					
LaFayette						
Lake	16,094	16,864	29,500	984,237	23,485	61,200
Lee	149,758	12,008	12,995	844,217	269,402	581,925
Leon	53	12		12	22	80
Levy	4				21	68
Liberty						
Madison						
Manatee	48,256	11,882	13,000		110,310	175,509
Marion	4,751	252	200	7,640	3,534	13,596
*Monroe						
Nassau						
Okaloosa		102	50	111	4,171	6,937
Okeechobee	2,065					
Orange	160,336	57,737	3,450	1,945	316,308	400,228
Osceola	6,161	2,102	461	51,007	31,682	45,346
Palm Beach	74,875	11,966		39,820	67,888	84,743
Pasco	11,951	4,638	88,245	14,530	26,940	53,880
*Pinellas						
Polk	450,000	600,000	300,000	745,000	1,750,000	3,062,500
Putnam	9,369	1,882		107,210	16,325	31,517
Santa Rosa	100		500	50	20	60
*Seminole						
St. Johns	241	22			621	1,863
*St. Lucie						
*Sumter						
Suwannee						
Taylor	2				3	6
Volusia	24,230	10,760	14,600	7,200	30,655	61,180
Wakulla						
Walton						
Washington		2		6		
Total	1,159,348	897,756	477,502	3,337,333	3,056,302	5,368,621

*Not reported.

AGRICULTURAL STATISTICS—LEMONS.

	Bearing Trees.	Non-Bear- ing Trees.	Nursery	Value.	Crates.	Value Dollars.
Alachua						
Baker						
*Bay						
Bradford						
Brevard	259	383	10	1,825	222	728
Broward						
Calhoun						
*Citrus						
Clay	12	9		18	4	16
Columbia						
*Dade						
DeSoto	314	73	10,000	3,000	311	855
Duval	4	39	20	191	7	28
Escambia		4	2	2		
*Flagler						
Franklin	206	238			412	2,060
*Gadsden						
Hamilton						
Hernando		50				
Hillsborough	3,270	3,542	25,843	7,874	5,580	13,063
Holmes						
Jackson						
Jefferson	2			4		
LaFayette						
Lake	12	8	21,000	20,545	23	70
Lee	1,478	38	4,500	50,855	44	144
Leon						
Levy						
Liberty						
Madison						
Manatee	15	64			30	79
Marion	5				7	22
*Monroe						
Nassau						
Okaloosa						
Okeechobee	113	6		10	460	920
Orange	12	18	2,300	550	18	54
Osceola	10			15	48	65
Palm Beach	1,424	972	6,000	9,930	972	14,674
Pasco	4		302	308	9	30
*Pinellas						
Polk	50	300	900,000	225,000	20	60
Putnam	2	1	150	108		
Santa Rosa						
*Seminole						
St. Johns						
*St. Lucie						
*Sumter						
Suwannee						
Taylor						
Volusia						
Wakulla						
Walton						
Washington						
Total	7,192	5,745	970,127	320,235	8,167	32,868

*Not reported.

	LIMES.			MANGOES.		
	Trees.	Crates.	Value Dollars.	Trees.	Crates.	Value Dollars.
Alachua						
Baker						
*Bay						
Bradford						
Brevard	180	53	465	147	121	845
Broward	131	54	100	53	45	100
Calhoun						
*Citrus						
Clay						
Columbia						
*Dade						
DeSoto	843	980	3,768	1,084	1,660	2,141
Duval	1	4	10	8	12	58
Escambia						
*Flagler						
Franklin						
*Gadsden						
Hamilton						
Hernando						
Hillsborough	1,274	2,447	5,618	1,634	1,120	5,218
Holmes						
Jackson						
Jefferson						
LaFayette						
Lake	1	1	3			
Lee						
Leon	50	20	60			
Levy						
Liberty						
Madison						
Manatee	14	21	50	133	151	388
Marion						
*Monroe						
Nassau						
Okaloosa						
Okeechobee						
Orange						
Osceola	5	50	25			
Palm Beach	1,705	947	6,678	4,041	1,910	5,732
Pasco						
*Pinellas						
Polk	3,000	15,000	3,750	200	10	40
Putnam	3	4	10			
Santa Rosa						
*Seminole						
St. Johns						
*St. Lucie						
*Sumter						
Suwannee						
Taylor						
Volusia						
Wakulla						
Walton						
Washington						
Total	7,207	19,581	20,537	7,300	5,029	14,522

*Not reported.

AGRICULTURAL STATISTICS—FIGS.

	Bearing Trees.	Non-Bear- ing Trees.	Crates.	Value Dollars.
Alachua				
Baker			20	60
*Bay				
Bradford				
Brevard	42	165	34	521
Broward				
Calhoun		1,000		
*Citrus				
Clay	111	16	190	438
Columbia				
*Dade				
DeSoto				
Duval	3,565	130	5,016	20,838
Escambia	486	1,709	273	589
*Flagler				
Franklin	980	827	2,940	11,760
*Gadsden				
Hamilton	18	124	65	112
Hernando	705	327	1,100	1,000
Hillsborough	1,003	12	920	4,259
Holmes	127		141	141
Jackson	619	843	1,042	1,800
Jefferson	14		15	28
LaFayette				
Lake	6	5	4	9
Lee		15		
Leon	2,645	72	4,665	9,326
Levy	11		22	68
Liberty	60	35	300	325
Madison				
Marion	79		223	554
*Monroe				
Nassau	214	14	32	96
Okaloosa				
Okeechobee				
Orange	34			
Osceola				
Palm Beach				
Pasco	30	500	44	132
*Pinellas				
Polk	50	10	20	60
Putnam	128	61	184	552
Santa Rosa	519	102	1,473	1,543
*Seminole				
St. Johns	1,473	233	2,120	6,360
*St. Lucie				
*Sumter				
Suwannee	23	10	12	36
Taylor				
Volusia	2,276	95	3,255	9,837
Wakulla				
Walton	943	2	3,642	3,642
Washington	502	29	3,615	3,068
Total	16,663	5,836	31,267	77,152

*Not reported.

AGRICULTURAL STATISTICS—PEARS.

	Bearing Trees.	Non-Bear- Trees.	Barrels.	Value Dollars.
Alachua	400		500	800
Baker	12		20	40
*Bay				
Bradford	12	20	15	30
Brevard	32	89	26	260
Broward				
Calhoun				
*Citrus				
Clay	262	131	126	679
Columbia				
*Dade				
DeSoto	64		49	150
Duval	839	1,059	814	8,623
Escambia	546	1,525	248	663
*Flagler				
Franklin	1,012	376	2,024	10,120
*Gadsden				
Hamilton	2		6	18
Hernando	99	120	97	290
Hillsborough	564	689	276	8,812
Holmes	105	60	42	304
Jackson	28	17	36	185
Jefferson	95		75	155
LaFayette				
Lake	1,713		2,018	2,201
Lee				
Leon	1,309	295	426	1,920
Levy	229	102	175	762
Liberty	150	49	300	1,200
Madison				
Manatee				
Marion	404	1,020	748	2,639
*Monroe				
Nassau	150	224	68	544
Okaloosa	54	197	50	1,030
Okeechobee				
Orange	114	489	54	223
Osceola	5		10	100
Palm Beach				
Pasco	61		54	214
*Pinellas				
Polk	50		20	80
Putnam	2,159	780	1,540	9,036
Santa Rosa	677	208	117	666
*Seminole				
St. Johns	157	57	194	700
*St. Lucie				
*Sumter				
Suwannee	94	56	27	107
Taylor				
Volusia				
Wakulla				
Walton	169	102	1,117	
Washington	78	126	153	719
Total	11,645	7,791	11,425	53,268

*Not reported.

AGRICULTURAL STATISTICS—SUGAR APPLES AND AVACADO
PEARS.

COUNTIES.	SUGAR APPLES.		AVACADO PEARS.		
	Crates.	Value Dollars.	Trees.	Crates.	Value Dollars.
Alachua					
Baker					
*Bay					
Bradford					
Brevard	3	30	332	67	1,491
Broward			911	168	3,113
Calhoun					
*Citrus					
Clay					
Columbia					
*Dade					
DeSoto	1	3	146	229	670
Duval	1	8	3	4	24
Escambia	3	12			
*Flagler					
Franklin					
*Gadsden					
Hamilton					
Hernando					
Hillsborough	62	172	1,581	1,327	3,726
Holmes					
Jackson					
Jefferson					
LaFayette					
Lake	2	2			
Lee	23	115	300,874	200,000	600,000
Leon					
Levy					
Liberty					
Madison					
Manatee			87	156	326
Marion					
*Monroe					
Nassau					
Okaloosa					
Okeechobee					
Orange					
Osceola			70	60	175
Palm Beach	24	80			
Pasco					
*Pinellas					
Polk			150	5	20
Putnam					
Santa Rosa					
*Seminole					
St. Johns	31	48	9	5	8
*St. Lucie					
*Sumter					
Suwannee					
Taylor					
Volusia					
Wakulla					
Walton					
Washington					
Total	150	470	304,163	202,021	609,553

*Not reported.

AGRICULTURAL STATISTICS—SAPODILLAS AND GUAVAS.

COUNTIES.	SAPODILLAS.		GUAVAS.	
	Crates.	Value Dollars.	Crates.	Value Dollars.
Alachua				
Baker				
*Bay				
Bradford				
Brevard	101	310	1,177	3,158
Broward			25	20
Calhoun				
*Citrus				
Clay			1	18
Columbia				
*Dade				
DeSoto	29	67	3,205	5,948
Duval			14	29
Escambia				
*Flagler				
Franklin			84	336
*Gadsden				
Hamilton				
Hernando			525	665
Hillsborough	227	514	18,692	36,279
Holmes				
Jackson				
Jefferson				
LaFayette				
Lake			103	111
Lee	139	695	11,360	5,844
Leon				
Levy				
Liberty				
Madison				
Manatee			2,203	5,450
Marion				
*Monroe				
Nassau				
Okaloosa				
Okeechobee			537	994
Orange			871	1,018
Osceola			2,135	1,099
Palm Beach	37	109	1,716	
Pasco			875	1,847
*Pinellas				
Polk			350	1,050
Putnam			438	1,147
Santa Rosa				
*Seminole				
St. Johns			102	309
*St. Lucie				
*Sumter				
Suwannee				
Taylor				
Volusia			952	1,850
Wakulla				
Walton				
Washington				
Total	533	1,695	45,366	67,172

*Not reported.

AGRICULTURAL STATISTICS OF JAPAN PERSIMMONS AND
COCOANUTS.

COUNTIES.	JAPAN PERSIMMONS.			COCOANUTS.		
	Trees.	Crates.	Value Dollars.	Trees.	Nuts.	Value Dollars.
Alachua						
Baker						
*Bay						
Bradford						
Brevard	580	207	1,742	46	250	37
Broward						
Calhoun	2,000					
*Citrus						
Clay	469	162	1,007			
Columbia						
*Dade						
DeSoto	3	8	18			
Duval	558	602	3,429			
Escambia	57	6	17			
*Flagler						
Franklin	314	942	1,884			
*Gadsden						
Hamilton						
Hernando	153					
Hillsborough	1,886	442	3,027			
Holmes						
Jackson						
Jefferson	3	2	3			
LaFayette						
Lake	157	38	72			
Lee				2,983	10,000	1,350
Leon	48	81	162			
Levy						
Liberty	10		40			
Madison						
Manatee	23	30	60	20	50	12
Marion	2	1	2			
*Monroe						
Nassau	256	84	212			
Okaloosa						
Okeechobee						
Orange	2,431	359	475			
Osceola	11	2,450	7,350			
Palm Beach	20	13	48			
Pasco	29	26	104			
*Pinellas						
Polk	200	50	200			
Putnam	280	113	1,400			
Santa Rosa	69	40	216			
*Seminole						
*Seminole						
St. Johns	562	2,405	7,215			
*St. Lucie						
*Sumter						
Suwannee						
Taylor						
Volusia	1,258	695	1,725			
Wakulla						
Washington	4	2	18			
Total	11,392	8,764	30,426	3,049	10,300	1,399

*Not reported.

AGRICULTURAL STATISTICS—GRAPES.

COUNTIES.	Pounds.	Value Dollars.
Alachua		
Baker		
*Bay		
Bradford	4,877	916
Brevard	4,600	1,102
Broward	325	80
Calhoun	1,000	100
*Citrus		
Clay	41,760	5,464
Columbia		
*Dade		
DeSoto	135	65
Duval	74,492	21,533
Escambia	854	107
*Flagler		
Franklin	700	476
*Gadsden		
Hamilton	6	4
Hernando		
Hillsborough	68,290	13,626
Holmes	5,620	1,682
Jackson	2,982	444
Jefferson	100	15
LaFayette	3,760	159
Lake	2,515	211
Lee		
Leon	14,885	2,981
Levy	9,830	1,690
Liberty		
Madison	1,600	670
Manatee	150	20
Marion	17,505	3,004
*Monroe		
Nassau	49,057	9,924
Okaloosa		
Okeechobee		
Orange	4,290	1,188
Osceola	980	412
Palm Beach	80	22
Pasco	10,800	2,460
*Pinellas		
Polk	6,000	1,200
Putnam	2,620	524
Santa Rosa	4,838	515
*Seminole		
St. Johns	119,626	11,962
*St. Lucie		
*Sumter		
Suwannee	10,100	2,305
Taylor	53	10
Volusia	68,900	5,670
Wakulla		
Walton	6,066	2,050
Washington		
Total	589,405	92,651

*Not reported.

AGRICULTURAL STATISTICS—PLUMS.

COUNTIES.	Bearing Trees.	Non-Bear- ing Trees.	Bushels.	Value Dollars.
Alachua				
Baker				
*Bay				
Bradford	35	600	44	117
Brevard	98	112	49	281
Broward				
Calhoun				
*Citrus				
Clay	619	265	383	1,640
Columbia				
*Dade				
DeSoto	407	61	480	849
Duval	2,946	987	3,331	15,325
Escambia	152	1,384	66	124
*Flagler				
Franklin	2,578	2,449	7,734	7,734
*Gadsden				
Hamilton	75	10	48	42
Hernando	11	132	5	25
Hillsborough	2,079	1,477	1,690	7,853
Holmes	43	6	43	57
Jackson	339	1,327	537	648
Jefferson				
LaFayette	9		9	35
Lake	4		3	6
Lee				
..Leon	2,880	27	1,304	2,675
Levy	140	10	167	452
Liberty	26		22	44
Madison				
Manatee	60		25	80
Marion	103	200	91	505
*Monroe				
Nassau	274	157	346	2,221
Okaloosa				
Okeechobee				
Orange	39	539	36	76
Osceola				
Palm Beach		10	8	20
Pasco	63	1,360	24	782
*Pinellas				
Polk	204	42	752	424
Putnam	1,124	233	567	3,733
Santa Rosa	510	480	290	1,190
*Seminole				
St. Johns	1,089	112	1,078	3,234
*St. Lucie				
*Sumter				
Suwannee	203	350	80	292
Taylor				
Volusia	315	110	760	615
Wakulla				
Walton	278	172	350	1,000
Washington	396	157	846	3,384
Total	17,099	12,769	21,158	55,463

*Not reported.

AGRICULTURAL STATISTICS—POULTRY AND EGGS.

COUNTIES.	EGGS.		POULTRY—All Ages.			
	Sold and Used.		Common Barnyard.		All Others.	
	Dozen.	Value Dollars.	Number	Value Dollars.	Number	Value Dollars.
Alachua	258,147	120,177	116,558	116,558	2,356	17,888
Baker	48,511	24,707	32,529	32,529	.....	.....
*Bay .....	.....	.....	.....	.....	.....	.....
Bradford	310,148	118,369	79,934	79,929	229	436
Brevard	63,698	41,127	18,200	25,525	161	362
Broward	612	315	2,471	2,730	.....	.....
Calhoun	34,693	16,020	38,826	18,907	50	50
*Citrus .....	.....	.....	.....	.....	.....	.....
Clay	67,332	33,316	23,120	20,407	1,203	1,895
Columbia	172,340	86,170	141,840	151,840	297	600
*Dade .....	.....	.....	.....	.....	.....	.....
DeSoto	105,755	59,333	73,825	61,268	3,508	6,225
Duval	606,047	302,032	155,728	308,820	16,025	18,401
Escambia	219,580	102,382	96,250	146,724	2,818	5,992
*Flagler .....	.....	.....	.....	.....	.....	.....
Franklin	2,104	1,052	27,072	27,072	.....	.....
*Gadsden .....	.....	.....	.....	.....	.....	.....
Hamilton	123,413	37,990	57,236	49,738	.....	.....
Hernando	45,556	23,302	18,056	18,056	1,064	2,375
Hillsborough ..	1,968,111	1,127,469	295,903	331,275	14,446	24,531
Holmes	199,235	79,394	50,937	35,655	486	700
Jackson	502,400	225,336	156,264	85,800	6	134
Jefferson	117,397	35,650	42,348	42,348	10	10
LaFayette	57,961	23,727	25,507	19,954	257	508
Lake	49,407	1,387	11,962	11,962	.....	.....
Lee	330,760	316,993	136,575	136,575	1,501	2,129
Leon	160,945	62,572	69,692	69,692	1,421	2,043
Levy	83,875	30,329	28,960	28,737	107	250
Liberty	925	580	9,300	4,620	.....	.....
Madison	508,249	148,789	76,637	75,388	108	228
Manatee	50,382	25,467	27,010	25,390	81	40
Marion	124,403	63,825	49,176	49,996	.....	.....
*Monroe .....	.....	.....	.....	.....	.....	.....
Nassau	255,480	105,300	30,649	38,299	19,655	15,397
Okaloosa	30,500	14,192	26,832	16,217	.....	.....
Okeechobee	11,170	5,361	6,852	6,475	453	828
Orange	161,320	81,909	96,059	95,733	1,516	2,666
Osceola	124,838	77,331	26,894	30,842	38,380	10,640
Palm Beach	166,438	57,948	69,957	89,835	2,435	4,136
Pasco	68,555	35,874	20,989	23,062	.....	.....
*Pinellas .....	.....	.....	.....	.....	.....	.....
Polk	400,000	200,000	175,000	162,500	1,000	3,000
Putnam	265,113	139,403	55,008	54,995	9,152	24,197
Santa Rosa	157,035	64,467	44,108	29,651	143	144
*Seminole .....	.....	.....	.....	.....	.....	.....
St. Johns	561,931	337,158	111,649	111,649	1,244	1,850
*St. Lucie .....	.....	.....	.....	.....	.....	.....
*Sumter .....	.....	.....	.....	.....	.....	.....
Suwannee	155,370	50,779	69,180	58,319	515	341
Taylor	75,000	37,500	20,941	20,109	9,242	5,795
Volusia	428,000	256,800	82,390	43,780	2,341	8,000
Wakulla	65,592	47,296	24,436	12,218	.....	.....
Walton	306,441	137,992	66,862	51,837	20	15
Washington	37,609	10,164	42,535	15,859	883	281
Total	9,512,379	4,767,283	2,840,257	2,838,875	133,318	162,037

*Not reported.

AGRICULTURAL STATISTICS—HONEY AND BEESWAX.

COUNTIES.	HONEY.			BEESWAX.	
	Stands of Bees.	Pounds.	Value Dollars.	Pounds.	Value Dollars.
Alachua	615	3,040	840		
Baker	16	320	74		
*Bay	46	685	153		
Bradford	799	11,371	3,174	140	57
Broward	25	250	50		
Calhoun	410	2,050	3,372	820	410
*Citrus					
Clay	348	2,297	1,302	25	8
Columbia	190	1,400	350		
*Dade					
DeSoto	456	2,840	634	347	149
Duval	156	2,090	1,187		
Escambia	1,894	17,485	3,477	60	23
*Flagler					
Franklin					
*Gadsden					
Hamilton	237	3,565	864	412	152
Hernando	6	150	45		
Hillsborough	685	11,810	5,225	40	10
Holmes	1,946	9,219	1,843	292	87
Jackson					
Jefferson	347	5,000	1,190	800	165
LaFayette					
Lake					
Lee	279	1,880	1,160	100	50
Leon	1,348	3,435	1,030	84	21
Levy	200	4,647	1,171		
Liberty	3,000	8,000	5,650	900	100
Madison	45	330	127	40	20
Manatee	167	735	256	50	25
Marion	196	6,995	1,995	15	6
*Monroe					
Nassau	386	5,585	1,311	25	9
Okaloosa	178	3,855	945	485	106
Okeechobee	173	3,340	936		
Orange	1,301	25,580	5,628	52	52
Osceola					
Palm Beach	229	9,240	6,013	250	125
Pasco	26	950	275		
*Pinellas					
Polk	500	2,500	625	600	180
Putnam	292	2,540	2,533		
Santa Rosa	237	3,220	586	182	48
*Seminole					
St. Johns	69	565	122		
*St. Lucie					
*Sumter					
Suwannee	330	10,567	8,285	459	190
Taylor	51	500	140	50	100
Volusia	3,465	87,790	21,165		
Wakulla	1,609	37,430	5,580	340	120
Walton	461	4,610	1,099	34	10
Washington	1,152	18,885	5,852	240	53
Total	23,870	316,711	96,264	6,922	2,251

*Not reported.

AGRICULTURAL STATISTICS—MILK, BUTTER AND CHEESE.

COUNTIES.	MILK.		BUTTER.		CHEESE.	
	Sold and Used.		Sold and Used.		Sold and Used.	
	Gallons.	Value Dollars.	Pounds.	Value Dollars.	Pounds.	Value Dollars.
Alachua	528,525	180,746	235,171	120,757		
Baker	4,750	2,340	600	360		
*Bay						
Bradford	56,365	25,260	6,465	4,261		
Brevard	73,640	49,222	4,180	2,729		
Broward	15,160	9,450				
Calhoun	30,410	12,960	2,115	1,064		
*Citrus						
Clay	26,815	10,840	3,096	2,143		
Columbia						
*Dade						
DeSoto	781,730	125,781	72,194	56,278		
Duval	1,137,940	700,000	1,220	754	480	192
Escambia	399,769	191,598	8,998	5,375		
*Flagler						
Franklin						
*Gadsden						
Hamilton	347,505	45,526	33,440	26,115		
Hernando	23,050	12,525				
Hillsborough	2,593,248	1,377,628	122,738	80,498		
Holmes	478,640	143,592	113,700	45,480		
Jackson	233,391	140,034	95,628	45,224		
Jefferson	54,540	11,327	17,225	7,288	10	5
LaFayette	1,524	800	132	95		
Lake	16,605	6,930	5,981	1,719		
Lee	283,187	189,912	65	43		
Leon	566,750	194,544	36,555	21,041		
Levy	71,231	10,309	4,755	3,172		
Liberty	190	150	250	160		
Madison	256,023	83,279	132,644	51,789		
Manatee	37,670	16,295	150	75		
Marion	252,975	124,418	59,109	28,764		
*Monroe						
Nassau	47,900	25,890	16,590	12,440		
Okaloosa	98,750	41,658	36,210	17,414		
Okeechobee	11,155	6,016	130	74		
Orange	565,188	290,323	72,275	52,431		
Osceola	121,075	59,800	20,180	5,155		
Palm Beach	202,170	202,170	1,220	1,066		
Pasco	101,815	50,940	16,045	11,890		
*Pinellas						
Polk	475,362	237,681	25,625	19,218		
Putnam	138,117	83,809	725	450		
Santa Rosa	168,305	127,486	50,730	26,505		
*Seminole						
St. Johns	487,800	390,240	63,911	31,955		
*St. Lucie						
*Sumter						
Suwannee	44,560	9,499	3,917	2,324		
Taylor						
Volusia	717,000	460,200	7,950	6,160		
Wakulla	8,600	4,300	1,650	825		
Walton	106,570	46,040	6,060	4,041		
Washington	51,287	22,078	23,205	6,381		
Total	11,656,887	5,723,594	1,302,834	703,513	490	197

*Not reported.

AGRICULTURAL STATISTICS OF WOOL.

	WOOL Spring Clip.		
	Fleece.	Pounds.	Value Dollars.
Alachua			
Baker			
*Bay			
Bradford			
Brevard			
Broward			
Calhoun			
*Citrus	857	1,935	472
Clay	194	1,368	730
Columbia	4,303	13,029	3,029
*Dade			
DeSoto			
Duval			
Escambia			
*Flagler			
Franklin			
*Gadsden			
Hamilton			
Hernando			
Hillsborough			
Holmes	4,807	17,137	4,956
Jackson			
Jefferson			
LaFayette			
Lake			
Lee			
Leon	150	611	260
Levy	280	840	490
Liberty			
Madison			
Manatee	1,180	3,440	1,475
Marion	3,466	10,400	3,399
*Monroe			
Nassau	963	1,933	647
Okaloosa	17,520	25,285	15,957
Okeechobee			
Orange			
Osceola	700	1,400	1,000
Palm Beach			
Pasco			
*Pinellas			
Polk	600	2,400	1,800
Putnam			
Santa Rosa	7,860	22,780	5,261
*Seminole			
St. Johns	618	4,376	875
*St. Lucie			
*Sumter			
Suwannee			
Taylor			
Volusia	5,720	17,760	5,565
Wakulla			
Walton	8,735	20,916	5,332
Washington	170	5,100	4,000
Total	58,123	160,710	55,848

*Not reported.

LIVE STOCK STATISTICS.
SHEEP—A.

	All Ages on Hand July 1, 1920.		Purchased.	
	Number	Value Dollars.	Number.	Value
*Alachua	370	2,900		
Baker				
*Bay	158	595	7	28
Bradford	61	720		
Brevard	104	520		
Broward	1,410	2,707		
Calhoun				
*Citrus	714	3,134		
Clay				
Columbia				
*Dade	250	1,000		
DeSoto	1,933	21,160	15	300
Duval	5,330	18,128		
Escambia				
*Flagler				
Franklin				
*Gadsden	160	360		
Hamilton	30	150		
Hernando	735	3,410	17	145
Hillsborough	5,409	16,702		
Holmes				
Jackson	102	379		
Jefferson	6	30		
LaFayette				
Lake			250	2,000
Lee	198	854		
Leon	504	1,780		
Levy	1,000	5,000		
Liberty	49	205		
Madison	4,950	24,750		
Manatee	5,069	21,620	625	2,500
Marion				
*Monroe	465	2,760	5,131	25,655
Nassau	22,507	61,438	7	35
Okaloosa				
Okeechobee	402	2,010		
Orange	1,060	4,375		
Osceola				
Palm Beach	40	120		
Pasco				
*Pinellas	3,000	15,000	1,000	5,000
Polk	5	50		
Putnam	14,559	43,972	87	285
Santa Rosa				
*Seminole	950	3,350		
St. Johns				
*St. Lucie				
*Sumter				
Suwannee	8	51	1	7
Taylor				
Volusia	5,110	25,550		
Wakulla	657	3,285		
Walton	8,673	42,813	25	125
Washington	1,718	8,385	801	4,000
Total	87,641	338,602	7,966	40,080

*Not reported.

LIVE STOCK STATISTICS.
SHEEP—B.

	Sold Living.		Slaughtered.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua				
Baker				
*Bay				
Bradford	50	200		
Brevard				
Broward				
Calhoun				
*Citrus				
Clay	67	209		
Columbia				
*Dade				
DeSoto			40	250
Duval			40	600
Escambia	25	100	2	10
Flagler				
Franklin				
*Gadsden				
Hamilton				
Hernando				
Hillsborough	7	60	1	5
Holmes			1	3
Jackson				
Jefferson	34	318	10	50
LaFayette				
Lake				
Lee	107	921		
Leon				
Levy	35	165	5	25
Liberty				
Madison				
Manatee				
Marion	85	485	207	828
*Monroe				
Nassau			62	345
Okaloosa				
Okeechobee				
Orange				
Osceola	100	800		
Palm Beach				
Pasco				
*Pinellas				
Polk	1,500	7,500	100	500
Putnam				
Santa Rosa	12	60	200	1,196
*Seminole				
St. Johns			140	408
*St. Lucie				
*Sumter				
Suwannee	12	80	1	7
Taylor				
Volusia				
Wakulla				
Walton				
Washington	104	540	11	55
Total	2,138	11,438	820	4,282

*Not reported.

LIVE STOCK STATISTICS.
SHEEP—C.

COUNTIES.	Died of Disease.		Killed by Dogs.		Died of Exposure to Weather	
	Number	Value Dollars.	Number	Value Dollars.	Number	Value Dollars.
Alachua						
Baker			50	250		
*Bay						
Bradford						
Brevard						
Broward						
Calhoun	100	600	465	1,615		
*Citrus						
Clay	77	243	37	108		
Columbia						
*Dade						
DeSoto			10	200		
Duval			325	1,095	335	1,145
Escambia						
*Flagler						
Franklin						
*Gadsden						
Hamilton						
Hernando						
Hillsborough	54	85	150	750	3,097	9,489
Holmes	180	555	663	1,750		
Jackson						
Jefferson	6	30	25	125	3	15
LaFayette	3	15				
Lake						
Lee						
Leon						
Levy			30	150		
Liberty			100	500		
Madison						
Manatee	126	504	230	920		
Marion						
*Monroe						
Nassau	71	355	197	985		
Okaloosa	3	15	685	2,186	49	167
Okeechobee						
Orange						
Osceola	35	110	50	150	81	255
Palm Beach						
Pasco						
*Pinellas						
Polk	50	250	350	1,400	50	350
Putnam	441	1,704	439	1,575	452	1,770
Santa Rosa						
*Seminole						
St. Johns	2	6			40	130
*St. Lucie						
*Sumter						
Suwannee	50	150				
Taylor						
Volusia						
Wakulla	200	1,000				
Walton	220	1,100	85	425		
Washington	17	21	90	450	12	32
Total	1,635	6,943	3,981	14,634	4,119	13,353

*Not reported.

LIVE STOCK STATISTICS.
HOGS—A.

COUNTIES.	All Ages on Hand July 1, 1920.		Slaughtered for Pork.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	62,075	398,244	7,279	88,465
Baker	8,997	74,650	2,046	35,710
*Bay				
Bradford	30,692	155,051	2,321	23,144
Brevard	1,354	12,002	4	60
Broward	56	860		
Calhoun	16,003	60,737	2,320	22,498
*Citrus				
Clay	9,657	35,963	1,123	9,878
Columbia	25,678	125,390	1,495	14,950
*Dade				
DeSoto	11,092	79,687	1,011	12,156
Duval	4,732	66,056	86	2,410
Escambia	10,507	76,492	542	18,142
*Flagler				
Franklin	5,396	53,960	2,320	23,200
*Gadsden				
Hamilton	21,826	150,102	638	7,280
Hernando	6,999	47,044	5	100
Hillsborough	21,944	185,586	10,231	81,168
Holmes	22,495	123,715	389	5,883
Jackson	64,010	232,464	48,549	218,164
Jefferson	21,211	146,679	210	3,369
LaFayette	25,018	95,693	1,781	24,028
Lake	5,239	45,645	388	4,110
Lee	102,770	334,075	76	990
Leon	19,437	105,987	845	12,387
Levy	24,645	107,681	1,483	21,873
Liberty	3,000	50,000		
Madison	48,195	237,634	369	3,951
Manatee	13,017	31,414	275	1,253
Marion	28,084	170,179	632	10,733
*Monroe				
Nassau	11,860	117,310	263	4,910
Okaloosa	4,478	14,441	66	575
Orange	9,087	102,811	2,796	51,499
Osceola	3,958	30,338	1,575	16,010
Palm Beach	1,711	58,440	41	1,620
Pasco	18,780	89,690	1,663	26,433
*Pinellas				
Polk	25,020	250,200	6,500	65,000
Putnam	12,160	76,290	1,361	17,939
Santa Rosa	11,992	69,787	4,438	68,860
*Seminole				
St. Johns	15,706	250,166	8,596	139,383
*St. Lucie				
*Sumter				
Suwannee	51,103	313,262	8,310	94,506
Taylor	9,530	25,855	239	2,100
Volusia	30,194	161,460	3,922	44,060
Wakulla	14,305	71,525	787	7,866
Walton	22,696	105,401	1,507	40,730
Washington	18,576	84,783	1,012	22,339
Total	884,287	5,076,851	129,630	1,263,041

*Not reported.

LIVE STOCK STATISTICS.
HOGS—B.

COUNTIES.	Slaughtered for Bacon.		Sold Living.		Died of Disease.	
	Number.	Value Dollars.	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	16,017	229,299	32,325	372,609	34,607	121,135
Baker	150	2,455	820	5,430	70	500
*Bay						
Bradford	12,229	291,876	8,011	87,820	1,327	7,840
Brevard			43	257	61	220
Broward	4	80				
Calhoun	1,514	15,815	748	8,072	936	3,090
*Citrus						
Clay	1,778	23,877	295	3,124	1,178	4,235
Columbia	16,154	161,540	3,393	33,930	722	3,610
*Dade						
DeSoto	2,108	35,848	44	730		
Duval	7	260	110	2,195	43	785
Escambia	2,376	36,793	390	3,691	1,443	8,535
Flagler						
Franklin			57	570	132	1,320
*Gadsden						
Hamilton	8,837	195,189	2,600	41,564	1,411	8,055
Hernando	5	100	64	1,500	10	200
Hillsborough ..	3,182	78,221	1,133	12,203	1,474	9,625
Holmes	10,842	167,498	1,978	21,913	8,241	39,729
Jackson	25,013	87,263	17,265	66,120	8,485	27,985
Jefferson	8,233	173,783	1,863	14,412	2,288	11,911
LaFayette	7,040	116,683	2,967	33,069	6,416	23,790
Lake	81	845	52	680	29	290
Lee	59	3,800			1	25
Leon	9,358	189,794	1,601	22,322	4,077	20,073
Levy	40,104	77,752	4,987	58,622	2,194	11,776
Liberty	1,500	32,500	280	2,500	375	3,370
Madison	8,474	137,600	11,637	84,866	10,373	41,475
Manatee	82	3,370	40	150	1	5
Marion	7,487	151,815	7,643	133,205	2,269	14,830
Monroe						
Nassau	1,817	55,935	12	200	3,008	35,700
Okaloosa	4,246	96,517	342	2,838	3,408	18,942
Okeechobee	336	6,492	582	4,412	7	140
Orange	33	740	985	10,355	265	2,435
Osceola	749	6,980	813	5,617	507	1,945
Palm Beach	4	286	2	100		
Pasco	1,906	30,301	134	1,255	316	1,570
*Pinellas						
Polk	900	90,000	1,050	63,000	3,050	30,500
Putnam	1,986	44,441	137	1,122	1,437	9,164
Santa Rosa	1,627	36,581	839	8,251	2,045	10,400
*Seminole						
St. Johns	830	13,095	1,453	24,207	1,324	20,295
*St. Lucie						
*Sumter						
Suwannee	121,923	195,365	7,437	89,455	8,588	35,116
Taylor	727	12,780				
Volusia	4,246	54,330	10,708	94,315		
Wakulla	3,321	53,791	487	3,911	2,509	12,545
Walton	4,676	124,802	93	2,678	1,345	5,111
Washington	7,144	75,987	567	4,479	2,886	14,105
Total	339,105	3,119,481	125,978	1,327,748	118,858	562,372

*Not reported.

LIVE STOCK STATISTICS.
GOATS.

COUNTIES.	COMMON GOATS.		GOATS. ANGORA	
	All Ages on Hand July 1, 1920.		All Ages on Hand July 1, 1920.	
	Number	Value Dollars.	Number	Value Dollars.
Alachua	2,200	6,405		
Baker	1,046	2,352	25	75
*Bay				
Bradford	2,209	3,962	25	250
Brevard				
Broward				
Calhoun	790	1,582		
*Citrus				
Clay	253	604	1,514	15,050
Columbia	600	600		
*Dade				
DeSoto			60	250
Duval	770	3,579	6	130
Escambia	2,745	4,773	22	116
*Flagler	1,066	4,264		
Franklin	1,066	4,264		
*Gadsden				
Hamilton	521	1,250		
Hernando	531	1,630		
Hillsborough	3,097	9,489		
Holmes	1,417	2,287	8	24
Jackson	1,058	2,071		
Jefferson	415	752	10	50
LaFayette	698	745		
Lake				
Lee	320	1,325		
Leon	866	2,026	16	50
Levy	624	964		
Liberty	200	300		
Madison	1,588	3,168	10	50
Manatee	280	760	46	325
Marion	1,019	2,614	62	185
*Monroe				
Nassau	869	1,940		
Okaloosa	1,394	1,394		
Okeechobee	33	100		
Orange	142	647		
Osceola	190	405		
Palm Beach			5	30
Pasco	2,240	7,045		
*Pinellas				
Polk	3,079	6,297	20	80
Putnam	274	729	20	340
Santa Rosa	1,291	1,524	56	285
*Seminole				
St. Johns	112	208	150	600
*St. Lucie				
*Sumter				
Suwannee	3,365	6,999		
Taylor	313	930		
Volusia	191	945	30	260
Wakulla	708	1,064		
Walton	976	2,259		
Washington	2,700	2,700	10	10
Total	42,190	92,688	2,095	18,160

*Not reported.

LIVE STOCK STATISTICS.

COUNTIES.	ASSES and JENNETS on hand July 1, 1920.		WORK OXEN No. Yoke on hand July 1, 1920.	
	Number.	Value Dollars.	Number.	Value. Dollars.
Alachua	4	675	39	73,412
Baker	2	50	17	1,220
*Bay				
Bradford	1	300	24	2,400
Brevard	10	280		
Broward				
Calhoun	1	100	178	10,740
*Citrus				
Clay	8	1,090	42	3,995
Columbia	5	1,000	22	1,250
*Dade				
DeSoto	2	150	2	150
Duval	2	100	49	2,975
Escambia	2	125	168	24,030
*Flagler				
Franklin			55	4,125
*Gadsden				
Hamilton	5	250	21	1,000
Hernando				
Hillsborough	13	1,255	38	3,575
Holmes			80	10,050
Jackson			194	10,700
Jefferson	3	260	188	7,235
LaFayette			5	135
Lake			14	700
Lee	11	1,625	97	10,025
Leon	1	50	302	20,685
Levy			44	1,055
Liberty			300	3,500
Madison	7	650	204	11,010
Manatee	2	200	14	705
Marion	15	2,750	7	240
*Monroe				
Nassau	4	400	198	37,980
Okaloosa	1	30	45	2,700
Okeechobee	2	175	6	575
Orange	5	925	7	185
Osceola	1	50	1	100
Palm Beach			407	1,910
Pasco			4	400
*Pinellas				
Polk	3	300	10	500
Putnam	7	2,400	39	2,605
Santa Rosa	7	1,200	197	10,270
*Seminole				
St. Johns			6	900
*St. Lucie				
*Sumter				
Suwannee	7	340	7	345
Taylor	1	200	3	380
Volusia			34	2,425
Wakulla	13	765	38	1,940
Walton	4	300	148	14,065
Washington	27	1,820	378	10,887
Total	176	19,815	3,650	292,879

*Not reported.

LIVE STOCK STATISTICS.

COUNTIES.	HORSES on hand July 1, 1920.		COLTS on hand July 1, 1920.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	3,181	415,103	210	20,535
Baker	266	37,835	7	1,650
*Bay				
Bradford	1,354	175,895	35	2,455
Brevard	188	18,335	4	195
Broward	45	7,125	4	700
Calhoun	622	73,010	18	935
*Citrus				
Clay	354	37,250	9	875
Columbia	783	117,300	8	400
*Dade				
DeSoto	1,680	220,925	8	545
Duval	1,621	228,135	6	525
Escambia	1,447	141,655	42	2,120
*Flagler				
Franklin	93	18,600	5	500
*Gadsden				
Hamilton	420	53,025	18	1,110
Hernando	574	70,555	12	290
Hillsborough	2,521	341,540	67	3,360
Holmes	422	55,348	14	1,320
Jackson	1,941	288,870	201	7,197
Jefferson	472	57,295	8	340
LaFayette	496	61,395	37	3,590
Lake	492	64,051	11	405
Lee	313	43,961	6	400
Leon	1,577	223,455	108	6,835
Levy	933	105,280	98	4,025
Liberty	325	7,000	12	900
Madison	751	99,400	25	1,885
Manatee	670	172,225	21	1,150
Marion	1,626	186,100	169	10,675
*Monroe				
Nassau	333	43,500	1	50
Okaloosa	343	42,810	4	230
Okeechobee	291	33,700	39	1,505
Orange	967	119,353	41	2,620
Osceola	840	88,909	33	1,245
Palm Beach	242	46,000		
Pasco	792	71,200	25	1,625
*Pinellas				
Polk	3,186	289,720	380	8,750
Putnam	448	88,615	11	500
Santa Rosa	733	10,661	42	1,240
*Seminole				
St. Johns	807	108,785	9	800
*St. Lucie				
*Sumter				
Suwannee	1,604	120,639	26	1,765
Taylor	209	3,370	9	500
Volusia	1,181	110,660	12	525
Wakulla	325	750	18	955
Walton	652	84,775	10	815
Washington	708	83,531	32	1,680
Total	38,778	4,667,626	8,855	99,722

*Not reported.

LIVE STOCK STATISTICS.

COUNTIES.	MULES on hand July 1, 1920.		MULE COLTS on hand July 1, 1920.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	2,627	534,380	29	2,925
Baker	2,597	193,830	2	300
*Bay	1,146	189,580	21	1,725
Bradford	161	29,390	9	1,475
Brevard	103	2,0650	8	525
Broward	908	151,240	6	550
Calhoun	354	52,125	9	600
*Citrus	2,402	360,300	3	275
Clay	801	199,335	24	1,160
Columbia	832	114,400	18	1,935
*Dade	889	123,667	2	250
DeSoto	95	23,750	46	315
Duval	1,106	195,250	14	905
Escambia	248	39,500	198	9,635
*Flagler	1,230	286,555	15	1,490
Franklin	1,725	278,035	14	1,725
*Gadsden	3,979	767,515	10	530
Hamilton	1,115	350,525	1	90
Hernando	469	86,750	5	425
Hillsborough	247	28,365	8	470
Holmes	202	39,795	8	400
Jackson	1,585	304,750	19	2,500
Jefferson	420	76,975	7	600
LaFayette	465	93,000	109	10,125
Lake	2,079	368,447	7	600
Lee	366	68,070	1	100
Leon	834	156,755	30	750
Levy	381	59,755	3	150
Liberty	780	106,495	4	180
Madison	29	5,400	5	1,350
Manatee	791	208,425	5	210
Marion	269	104,062	1	100
*Monroe	70	20,800	1	100
Nassau	249	41,300	1	100
Okaloosa	4,794	500,720	30	750
Okeechobee	485	92,550	3	150
Orange	657	109,765	4	180
Osceola	1,021	20,845	17	1,168
Palm Beach	1,765	293,957	33,722	470
Pasco	248	33,722	6	470
*Pinellas	1,347	296,660	3	400
Polk	344	62,780	1	50
Putnam	1,128	201,660	24	1,905
Santa Rosa	1,169	157,283	24	1,905
*Seminole	1,021	20,845	17	1,168
St. Johns	1,765	293,957	33,722	470
*St. Lucie	248	33,722	6	470
*Sumter	1,347	296,660	3	400
Suwannee	344	62,780	1	50
Taylor	1,128	201,660	24	1,905
Volusia	1,169	157,283	24	1,905
Wakulla	1,021	20,845	17	1,168
Walton	1,765	293,957	33,722	470
Washington	248	33,722	6	470
Total	45,112	7,447,113	693	48,338

*Not reported.

LIVE STOCK STATISTICS.

COUNTIES	STOCK CATTLE, Native Breeds, all ages, on hand July 1, 1920.	
	Number.	Value Dollars.
Alachua	73,412	1,357,381
Baker	12,337	244,466
*Bay		
Bradford	21,705	441,366
Brevard	6,170	97,945
Broward	38	2,400
Calhoun	8,520	156,840
*Citrus		
Clay	8,634	177,600
Columbia	21,916	438,320
*Dade		
DeSoto	225,448	3,511,570
Duval	3,450	110,135
Escambia	7,519	172,177
*Flagler		
Franklin	2,764	165,840
*Gadsden		
Hamilton	9,000	162,045
Hernando	4,783	83,065
Hillsborough	30,792	910,131
Holmes	8,961	139,079
Jackson	16,030	473,252
Jefferson	7,162	157,299
LaFayette	13,545	230,921
Lake	7,959	103,165
Lee	19,065	179,650
Leon	7,579	91,024
Levy	14,259	259,185
Liberty	2,000	35,000
Madison	14,351	308,322
Manatee	13,357	221,225
Marion	21,943	452,050
*Monroe		
Nassau	12,953	290,205
Okaloosa	7,517	121,840
Okeechobee	35,429	697,495
Orange	14,750	234,182
Osceola	28,390	851,700
Palm Beach	65	2,900
Pasco	15,003	301,415
*Pinellas		
Polk	131,076	3,226,650
Putnam	10,863	221,352
Santa Rosa	10,078	192,205
*Seminole		
St. Johns		
*St. Lucie	69,078	2,758,870
*Sumter		
Suwannee	13,992	195,015
Taylor	5,012	173,975
Volusia	45,595	683,925
Wakulla	6,120	122,400
Walton	12,942	286,598
Washington	12,891	109,466
Total	1,014,183	21,151,646

*Not reported.

LIVE STOCK STATISTICS.
CATTLE—Movement This Year, All Ages, 1919-20 (A).

COUNTIES	Purchased.		Died of Disease.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	2,200	66,000	400	8,000
Baker	390	10,300	2	50
*Bay				
Bradford	1,014	9,925	93	1,850
Brevard	110	320	2	172
Broward	900	1,800		
Calhoun	26	593	176	2,015
*Citrus				
Clay	542	11,780	46	1,810
Columbia	885	17,700	184	3,680
*Dade				
DeSoto	2,293	60,820	27	520
Duval			3	30
Escambia	281	6,658	29	694
*Flagler				
Franklin	1,632	65,280	37	1,480
*Gadsden				
Hamilton	565	10,978	16	375
Hernando			2	75
Hillsborough	4,430	68,470	205	6,240
Holmes	967	19,959	629	10,967
Jackson	1,245	56,271	92	1,095
Jefferson	351	11,390	81	2,030
LaFayette	357	11,391	4,154	57,785
Lake			8	450
Lee	70	1,600		
Leon	971	27,963	274	13,833
Levy	590	1,425	219	3,324
Liberty				
Madison	1,309	33,110	831	12,811
Manatee	5	125	1,004	5,140
Marion	2,165	106,170	502	9,277
*Monroe				
Nassau	125	3,305	281	6,220
Okaloosa	99	2,185	155	3,020
Okeechobee	3,768	77,550	1,928	64,350
Orange	165	14,900	355	8,435
Osceola	3,214	10,425	226	4,880
Palm Beach	27	1,000	6	600
Pasco	523	13,310	104	2,130
*Pinellas				
Polk	2,000	50,000	200	5,000
Putnam	363	5,510	313	7,950
Santa Rosa	519	11,493	335	6,011
*Seminole				
St. Johns	222	7,550	8	270
*St. Lucie				
*Sumter				
Suwannee	419	9,168	82	1,240
Taylor			31	360
Volusia				
Wakulla	945	18,900	108	2,160
Walton	688	13,760	655	12,865
Washington	404	6,872	122	1,466
Total	36,680	845,956	13,925	270,660

*Not reported.

LIVE STOCK STATISTICS.
CATTLE—Movement This Year, All Ages, 1919-20 (B).

COUNTIES	Slaughtered (For Home Use)		Exported Living.	
	Number	Value Dollars.	Number	Dollars. Dollars.
Alachua	4,020	226,800	1,459	84,300
Baker	55	1,300	100	4,000
*Bay				
Bradford	62	1,405	46	915
Brevard	1	20		
Broward			356	1,386
Calhoun	8	185		
*Citrus				
Clay	199	6,887	13	515
Columbia	137	2,740	45	900
*Dade				
DeSoto	114	2,210	4,335	118,600
Duval				
Escambia	117	2,829		
*Flagler				
Franklin	1,698	67,920		
*Gadsden				
Hamilton	27	685	499	1,145
Hernando				
Hillsborough	8,118	80,014		
Holmes	474	12,886	500	6,600
Jackson	1,937	16,519	21	650
Jefferson	189	5,405		
LaFayette	85	2,622	633	19,370
Lake	1	25		
Lee	4	120	316	7,445
Leon	166	3,117	11	390
Levy	72	1,956	203	5,600
Liberty			300	7,500
Madison	430	8,433	3	65
Manatee	5	125		
Marion	1,035	1,419		
*Monroe				
Nassau	159	4,985		
Okaloosa	8	187	18	360
Okeechobee	1,009	25,151	325	6,500
Orange	616	14,420		
Osceola	105	2,590		
Palm Beach				
Pasco	134	3,370		
*Pinellas				
Polk	276	6,900	800	12,000
Putnam	627	20,739	54	5,100
Santa Rosa	672	20,368	368	12,123
*Seminole				
St. Johns	1,944	77,760	532	21,640
*St. Lucie				
*Sumter				
Suwannee	283	8,125		
Taylor	25	625		
Volusia				
Wakulla	7	175		
Walton	215	2,504		
Washington	180	3,040	6	75
Total	25,214	637,561	10,943	317,379

*Not reported.

LIVE STOCK STATISTICS.
CATTLE—Movement This Year, All Ages, 1919-20 (C).

COUNTIES	Sold Living (Local Use)		Died of Exposure to Weather.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	1,260	55,180		
Baker	499	8,735	5	150
*Bay				
Bradford	1,414	31,115	2,193	38,560
Brevard	3	90	2	122
Broward				
Calhoun	316	10,657		
*Citrus				
Clay	3,875	132,905	306	5,857
Columbia	675	13,500	128	2,560
*Dade				
DeSoto	12,698	60,750		
Duval	21	1,675	8	350
Escambia	607	16,814	79	1,765
*Flagler				
Franklin	128	5,120		
*Gadsden				
Hamilton				
Hernando				
Hillsborough	3,157	87,397	64	2,785
Holmes	908	19,916	3	60
Jackson	5,460	102,343	33	280
Jefferson	586	13,698	40	730
LaFayette	573	15,398	310	5,168
Lake	20	510		
Lee	110	3,857		
Leon	848	3,093		
Levy	2,193	61,840	941	16,805
Liberty				
Madison	1,290	112,327	119	1,910
Manatee	221	6,600		
Marion	3,137	90,180	615	11,500
*Monroe				
Nassau	175	6,225	263	13,575
Okaloosa	252	5,024	344	5,175
Okeechobee	6,143	146,519	1,199	19,300
Orange	353	18,822	3	100
Osceola	5,691	78,105	307	9,905
Palm Beach	200	400		
Pasco	716	6,889	237	4,565
*Pinellas				
Polk	10,042	251,050	2,006	50,150
Putnam	2,774	73,313	2,037	37,509
Santo Rosa	1,229	29,044	212	3,478
*Seminole				
St. Johns	8,024	320,020	1,702	65,220
*St. Lucie				
*Sumter				
Suwannee	424	9,445	27	685
Taylor	17	340	550	5,000
Volusia				
Wakulla	224	5,681		
Walton	1,304	26,540		
Washington	302	6,366	24	386
Total	78,444	1,854,107	13,944	304,725

*Not reported.

LIVE STOCK STATISTICS.
THOROUGHbred CATTLE—Including Three-quarter Grades
and Upward, All Ages, on Hand.

COUNTIES	COWS.			
	Kept for Milk Only, on Hand July 1, 1920.		Holstein and Grades. July 1, 1920.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	1,059	89,869	8	650
Baker	1,027	7,290		
*Bay				
Bradford	174	21,600	14	675
Brevard	186	25,490	27	2,960
Broward	83	12,358	1	300
Calhoun	227	9,595	11	675
*Citrus				
Clay	76	758	23	1,175
Columbia	11	350		
*Dade				
DeSoto	93	7,125	4	400
Duval	2,435	239,110	33	2,300
Escambia	873	72,026	17	1,619
*Flagler				
Franklin	190	19,000		
*Gadsden				
Hamilton	795	23,588		
Hernando	4	225	6	1,100
Hillsborough	3,348	437,486	41	4,295
Holmes	2,824	95,830	14	1,050
Jackson	497	33,234	11	1,040
Jefferson				
LaFayette	12	790	20	1,185
Lake	71	7,420		
Lee	250	35,655		
Leon	4,116	246,930	33	3,600
Levy	104	7,335	4	250
Liberty	156	1,560	1	400
Madison	875	42,521	6	450
Manatee	281	21,170	1	75
Marion	611	27,825	5	400
*Monroe				
Nassau	143	13,180	25	2,900
Okaloosa	630	34,540		
Okeechobee	28	2,500	11	670
Orange	1,130	11,300	56	7,225
Osceola	402	48,324	17	1,130
Palm Beach	540	56,975		
Pasco	131	13,130	4	400
*Pinellas				
Polk	2,000	160,000	150	12,000
Putnam	434	36,525	21	1,740
Santa Rosa	508	25,645	20	1,125
*Seminole				
St. Johns	834	65,615	605	43,230
*St. Lucie				
*Sumter				
Suwannee	180	7,573		
Taylor				
Volusia	1,164	89,750	93	5,380
Wakulla	23	1,970		
Walton	552	25,015	34	3,615
Washington	836	24,364	12	1,755
Total	29,857	2,204,186	1,328	105,769

*Not reported.

LIVE STOCK STATISTICS.
THOROUGHbred CATTLE—Including Three-quarter Grades and
Upward, All Ages, on Hand July 1, 1920.

COUNTIES	Devon and Grades		Aberdeen Angus Polled & Grades.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	1	100	224	13,100
Baker			1	100
*Bay				
Bradford	1	100	100	7,500
Brevard	2	150		
Broward	45	4,560		
Calhoun	1	75	6	450
*Citrus				
Clay	7	290		
Columbia				
*Dade				
DeSoto	2	150	2	200
Duval				
Escambia	1	75		
*Flagler				
Franklin				
*Gadsden			2	40
Hamilton				
Hernando				
Hillsborough	7	550	802	87,825
Holmes				
Jackson				
Jefferson			104	3,730
LaFayette	1	100		
Lake				
Lee			2	400
Leon				
Levy	5	375	19	1,725
Liberty				
Madison			1	250
Manatee	6	100		
Marion			172	14,880
*Monroe				
Nassau			2	250
Okaloosa				
Okeechobee			23	585
Orange			17	1,550
Osceola	9	875	50	3,700
Palm Beach				
Pasco			1	100
*Pinellas				
Polk			25	1,875
Putnam			47	4,325
Santa Rosa			5	250
*Seminole				
St. Johns				
*St. Lucie				
*Sumter				
Suwannee				
Taylor				
Volusia			23	720
Wakulla				
Walton			1	50
Washington				
Total	88	7,440	1,629	143,105

*Not reported.

LIVE STOCK STATISTICS.
THOROUGHbred CATTLE—Including Three-quarter Grades and
Upward, All Ages, on Hand July 1, 1920.

COUNTIES.	Hereford and Grades.		Shorthorn and Grades.	
	Number.	Value Dollars.	Number.	Value Dollars.
Alachua	650	46,705	150	8,600
Baker	277	9,365		
*Bay				
Bradford	2	200		
Brevard	1	100	2	230
Broward	31	6,000		
Calhoun	18	900	7	500
*Citrus				
Clay	416	28,350	130	9,125
Columbia	*			
*Dade				
DeSoto	3	300	1	180
Duval	49	5,300	3	150
Escambia	1	15	3	275
*Flagler				
Franklin				
*Gadsden				
Hamilton	3	200	30	300
Hernando	20	800	30	1,200
Hillsborough	134	5,425	145	9,450
Holmes	140	11,675	1	250
Jackson	133	4,755		
Jefferson	105	2,925	15	750
LaFayette	1	100		
Lake	17	865		
Lee	164	9,650		
Leon	259	10,600	31	2,950
Levy	128	5,233	1	100
Liberty				
Madison	6	230	4	200
Manatee				
Marion	316	15,920	475	8,775
*Monroe				
Nassau	21	1,835	25	1,500
Okaloosa	3	400		
Okeechobee			2	175
Orange	4	375	2	200
Osceola	63	7,325	2	
Palm Beach				
Pasco	3	300		
*Pinellas				
Polk	181	13,575	25	1,875
Putnam	2	55	161	6,100
Santa Rosa	102	3,970		
*Seminole				
St. Johns				
*St. Lucie				
*Sumter				
Suwannee	12	715	56	1,400
Taylor	44	3,575	19	725
Volusia			77	2,700
Wakulla				
Walton	120	8,290	10	735
Washington	47	3,695	66	905
Total	3,476	209,723	1,471	59,350

*Not reported.

LIVE STOCK STATISTICS.
THOROUGHbred CATTLE—Including Three-quarter Grades and
Upward, All Ages, on Hand July 1, 1920.

COUNTIES.	Guernsey and Grades.		Jersey and Grades.	
	Number.	Value Dollars	Number.	Value Dollars
Alachua	20	1,540	1,735	114,680
Baker				
*Bay				
Bradford	13	775	77	5,035
Brevard	24	2,400		
Broward				
Calhoun	1	50	6	120
*Citrus				
Clay	12	625	194	13,635
Columbia				
*Dade				
DeSoto	2	200	486	61,175
Duval	136	8,075	391	22,940
Escambia	3	175	51	4,435
*Flagler				
Franklin	63	6,300		
*Gadsden				
Hamilton	1	80		
Hernando	12	800	307	36,325
Hillsborough	688	59,034	16	1,275
Holmes	1	75	110	5,455
Jackson	6	400	419	20,720
Jefferson	13	720	96	7,050
LaFayette	47	3,560	11	775
Lake			5	500
Lee			106	8,250
Leon			1,002	30,715
Levy			48	3,160
Liberty	1	150	12	1,300
Madison			18	1,150
Manatee	3	225	130	8,100
Marion	64	3,245	38	1,710
*Monroe				
Nassau	2	250	139	12,525
Okaloosa				
Okeechobee	62	3,450	141	4,581
Orange	184	28,015	1,386	130,458
Osceola	25	2,535	668	47,365
Palm Beach	30	3,000	266	5,415
Pasco	177	20,545	152	13,900
*Pinellas				
Polk	250	25,000	1,000	100,000
Putnam	95	8,400	237	12,545
Santa Rosa	26	1,355	204	10,315
*Seminole				
St. Johns			484	37,080
*St. Lucie				
*Sumter				
Suwannee			90	6,804
Taylor				
Volusia			367	15,150
Wakulla				
Walton	1	100	27	2,375
Washington			24	650
Total	1,962	181,079	10,352	747,668

*Not reported.

THE COMPTROLLER'S REPORT FOR 1920, SHOWS:

The number of acres taxed.....	32,099,052
The number of acres improved.....	1,612,054
The valuation of land exclusive of town and city lots	\$133,193,252
The valuation of town and city lots.....	120,504,341
The aggregate valuation of real estate.....	253,785,338

The following shows the average assessment per acre of land exclusive of town and city lots:

Alachua	\$ 3.74
Baker	3.44
Bay	3.30
Bradford	5.87
Brevard	4.11
Broward	3.14
Calhoun	2.26
Citrus	4.57
Clay	2.52
Columbia	2.71
Dade	3.15
DeSoto	2.78
Duval	18.56
Escambia	7.02
Flagler	3.31
Franklin	1.76
Gadsden	6.81
Hamilton	3.87
Hernando	3.89
Hillsborough	13.28
Holmes	3.47
Jackson	3.64
Jefferson	3.36
Lafayette	2.80
Lake	4.07
Lee	2.10
Leon	3.82
Levy	2.28
Liberty	1.58
Madison	3.59
Manatee	5.61
Marion	4.10

Monroe	1.01
Nassau	2.47
Okaloosa	2.77
Okeechobee	3.55
Orange	9.07
Osceola	3.34
Palm Beach	2.45
Pasco	6.19
Pinellas	54.88
Polk	9.45
Putnam	3.15
St. Johns	3.75
St. Lucie	5.93
Santa Rosa	3.64
Seminole	9.69
Sumter	6.87
Suwannee	4.36
Taylor	4.07
Volusia	5.03
Wakulla	1.69
Walton	3.53
Washington	2.64

MANUFACTURING REPORT—ALACHUA COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
19	Naval Stores	\$ 366,500	409	189,400
12	Grist Mills	3,800	23	2,700
8	Electric Shop and Plant.....	270,000	7	10,200
8	Shoe Shops	4,400	13	8,800
3	Bred Bakeries	16,000	10	8,500
9	Ice Plants	35,000	14	8,000
1	Broom Factory	22,000	3	1,810
8	Millinery Shops	93,000	13	9,750
2	Foundry and Machine Shops.....	25,000	69	11,000
3	Bottling Works	22,000	9	11,500
1	Cabinet Shop	500	1	1,000
2	Bicycle Shops	3,000	5	3,200
4	Vulcanizing Shops	27,700	7	6,600
2	Tin shops	1,000	2	1,600

1	Laundry	15,000	14	6,000
5	Jewelry shops	15,000	7	9,100
1	Paint and Repair Shop.....	1,000	1	1,200
1	Lumber mill	15,000	18	12,960
1	Planing Mill	25,000	25	15,000
1	Crate factory	25,000	30	20,000
8	Blacksmith shops	11,300	17	11,700
1	Wagon factory	2,000	2	2,000
14	Garages	42,700	33	31,400
1	Brick yard	3,500	10	2,000
1	Gun smith shop	500	1	1,000
1	Plumbing establishment	2,000	2	2,000
2	Tailoring shops	2,000	4	5,500
3	Printing companies	27,000	25	15,500
1	Fertilizer company	50,000	4	3,000
117	Total.....	1,146,900	776	412,420

MANUFACTURING REPORT—ALACHUA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE,	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
19	Naval stores	409	\$ 189,400	.....	.....	.....	.....	409	324
12	Grist mills	23	27,000	.....	.....	.....	.....	23	23
8	Electric shop and plant	7	10,000	.....	.....	.....	.....	7	7
8	Shoe shop	13	8,800	.....	.....	.....	.....	13	13
3	Bread	10	8,500	.....	.....	.....	.....	10	10
2	Ice	12	8,000	.....	.....	.....	.....	12	12
1	Brooms	3	1,810	.....	.....	.....	.....	3	3
8	Millinery .....	.....	.....	13	\$ 9,750	.....	.....	13	13
2	Foundry - mach. shop..	60	11,000	.....	.....	.....	.....	82	68
3	Mfg. drinks	9	11,500	.....	.....	.....	.....	14	14
1	Cabinet shop	1	1,000	.....	.....	.....	.....	1	1
2	Bicycle shop	5	3,200	.....	.....	.....	.....	.....	.....
4	Vulcanizing	7	6,600	.....	.....	.....	.....	7	7
2	Tin shops	2	1,600	2	1,600	.....	.....	2	2

1	Laundry	6	4,000	6	4,000	8	3,100	14	14
5	Jewelry shops	7	9,100	7	9,100	.....	.....	7	7
1	Paint and repair shop.	1	1,200	1	1,200	.....	.....	1	1
1	Lumber	18	12,960	.....	.....	.....	.....	18	18
1	Planing mill	25	15,000	.....	.....	.....	.....	30	30
1	Mfg. of crates	30	20,000	.....	.....	.....	.....	30	30
8	Blacksmith shops	17	11,700	.....	.....	.....	.....	17	16
1	Wagon Mfg.	2	2,000	.....	.....	.....	.....	2	2
14	Garages	33	31,400	.....	.....	.....	.....	33	31
1	Brick Mfg.	10	2,000	.....	.....	.....	.....	10	10
1	Plumbing	2	2,000	.....	.....	.....	.....	2	2
1	Gun smith	1	1,000	.....	.....	.....	.....	1	1
2	Tailoring shops	4	5,500	.....	.....	.....	.....	4	4
3	Printing offices	19	12,500	6	3,000	.....	.....	25	24
1	Fertilizer company	4	3,000	.....	.....	.....	.....	.....	.....
Total		385	396,670	27	15,750	.....	.....	780	687

MANUFACTURING REPORT—ALACHUA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
19	Naval stores .....	.....	.....	.....	\$	.....	.....
12	Grist mill .....	.....	.....	.....	\$	24,015	\$ 36,425
8	Electric shop and plant.....	.....	.....	.....	.....	.....	.....
8	Shoe shop .....	.....	.....	.....	.....	12,500	19,350
3	Bread .....	.....	.....	.....	.....	19,000	27,000
2	Ice .....	.....	.....	.....	.....	35,000	50,000
1	Brooms .....	.....	.....	.....	.....	3,000	4,500
8	Millinery .....	.....	.....	.....	.....	52,700	75,500
2	Foundry and machine shop...	.....	.....	.....	.....	35,000	60,000
3	Manufacturing drinks .....	.....	.....	.....	.....	26,200	35,000
1	Cabinet shop .....	.....	.....	.....	.....	500	1,500
2	Bicycle shop .....	.....	.....	.....	.....	7,800	10,400
4	Vulcanizing .....	.....	.....	.....	.....	11,550	20,500
2	Tin shop .....	.....	.....	.....	.....	3,100	5,600

1	Laundry					30,000	38,500
5	Jewelry					9,600	19,300
1	Paint and repair shop.....					2,000	5,000
1	Lumber					31,604	43,400
1	Planing mill					40,000	68,635
1	Manufacturing of crates					50,000	64,200
8	Blacksmiths					35,000	68,200
1	Wagon manufacturing					7,000	12,000
14	Garage					71,380	105,400
1	Brick manufacturing					3,000	4,000
1	Plumbing					5,600	7,250
1	Gun smith					2,150	3,550
2	Tailoring					8,500	19,100
3	Printing					66,500	83,200
1	Fertilizer					6,000	9,000
	Totals					598,455	851,510

MANUFACTURING REPORT—ALACHUA COUNTY.—(Continued)

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
19	Naval stores	230,200	\$219,963	13,827	\$278,540	.....	.....	.....	.....
12	Grist mill .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Electric shop and plant..	.....	.....	.....	.....	.....	.....	.....	.....
8	Shoe shop .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Bread .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Ice .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Brooms .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Millinery .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Foundry and mach. shop.	.....	.....	.....	.....	.....	.....	.....	.....
3	Manufacturing drinks ...	.....	.....	.....	.....	.....	.....	.....	.....
1	Cabinet shop .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Bicycle shop .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Vulcanizing .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Tin shop .....	.....	.....	.....	.....	.....	.....	.....	.....

1	Laundry .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Jewelry .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Paint and repair shop...	.....	.....	.....	.....	.....	.....	.....	.....
1	Lumber .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Planing mill .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Manufacturing of crates.	.....	.....	.....	.....	.....	.....	.....	.....
8	Blacksmiths .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Wagon manuufacturing .	.....	.....	.....	.....	.....	.....	.....	.....
14	Garage .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Brick manufacturing...	.....	.....	.....	.....	.....	.....	.....	.....
1	Plumbing .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Gun smith .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Tailoring .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Printing .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Fertilizer .....	.....	.....	.....	.....	.....	.....	.....	.....
Totals		230,200	\$219,963	13,827	\$278,540	.....	.....	.....	.....

MANUFACTURING REPORT—BRADFORD COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements,	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
6	Blacksmith shops	\$ 10,450	5	\$ 7,700
1	Brooms	6,000	5	2,500
2	Cotton gins	8,000	15	275
5	Garages	4,700	4	2,120
1	Grist mill	663	.....	.....
15	Naval stores	405,500	502	180,430
5	Saw mills	12,000	25	8,000
1	Shingle mill	4,500	3	2,347
	Totals	\$ 451,813	559	\$ 203,372

MANUFACTURING REPORT—BRADFORD COUNTY.—(Continued).

8—Part 2-3—Agri.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
6	Blacksmith shops	5	\$ 7,700	.....	\$ .....	.....	.....	7	4
1	Broom factory	5	2,500	.....	.....	.....	.....	7	3
2	Cotton gins	15	275	.....	.....	.....	.....	15	15
5	Garages	4	2,120	.....	.....	.....	.....	6	1
1	Grist mill .....	.....	.....	.....	.....	.....	.....	.....	.....
15	Naval stores	500	180,180	.....	.....	2	250	626	343
5	Saw mill	25	8,000	.....	.....	.....	.....	34	19
1	Shingle mill	3	2,347	.....	.....	.....	.....	8	0
	Totals	557	\$ 203,122	.....	\$ .....	2	250	703	385

MANUFACTURING REPORT—BRADFORD COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Blacksmith shops .....	.....	\$.....	.....	\$.....	9,500	23,000
1	Broom factory .....	.....	.....	.....	.....	11,348	10,085
2	Cotton gins .....	.....	.....	.....	.....	15	.....
5	Garages .....	.....	.....	.....	.....	11,530	16,320
1	Grist mill .....	.....	.....	.....	.....	100	125
15	Naval stores .....	.....	.....	.....	.....	.....	.....
5	Saw mills .....	.....	.....	.....	.....	7,650	17,000
1	Shingle mill .....	.....	.....	.....	.....	20,000	25,000
	Totals .....	.....	.....	.....	.....	\$ 60,143	\$ 91,530

MANUFACTURING REPORT—BRADFORD COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
6	Blacksmith shops .....	.....	\$ .....	.....	\$ .....	.....	\$ .....	.....	\$ .....
1	Broom factory .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Cotton gins .....	.....	.....	.....	.....	35	4,750	40	9,725
5	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Grist mill .....	.....	.....	.....	.....	.....	.....	.....	.....
15	Naval stores	149,852	208,100	25,037	264,415	.....	.....	.....	.....
5	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Shingle mill .....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals	149,852	\$208,100	25,037	\$264,415	35	\$ 4,750	40	\$ 9,725

MANUFACTURING REPORT—BREVARD COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
6	Auto Sales and Repairs.....	\$ 102,379	47	\$ 61,863
2	Bakeries	22,500	7	8,300
2	Blacksmith Shops and Repairs.....	4,000	6	8,900
4	Building Construction	74,000	72	84,160
2	Boat and Marine Ways.....	22,000	10	12,800
2	Jeweler and Repairs.....	12,100	5	6,900
2	Barrel Factories	7,000	5	4,650
3	Ice and Electricity.....	220,000	30	30,450
2	Ice Factories	45,000	10	13,270
1	Lighting Plants	15,000	1	1,000
4	Lumber Manufacturing Companies.....	445,500	319	431,160
2	Naval Stores	16,500	47	24,939
4	Fisheries	60,600	150	168,728

5	Fruit Packing House.....	202,000	438	229,960
1	Quarry	30,000	20	23,000
1	Repairs and Battery Work.....	1,700	4	7,020
2	Shoe Shop and Repairs.....	4,480	5	6,490
45	Totals.....	\$ 1,284,759	1176	\$ 1,123,590

MANUFACTURING REPORT—BREVARD COUNTY.—(Continued).

Number of Establishments Reporting	OR PRODUCT NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
6	Auto sales and repairs..	46	\$ 61,404	1	459	.....	.....	59	33
2	Bakeries	5	7,180	2	1,120	.....	.....	10	5
2	Blacksmith shops and repairs	6	8,900	.....	.....	.....	.....	9	3
4	Building construction..	72	84,160	.....	.....	.....	.....	136	25
2	Boat and marine ways.	10	12,800	.....	.....	.....	.....	14	4
2	Jeweler and repairs....	5	6,900	.....	.....	.....	.....	7	3
2	Barrel factories.....	5	4,650	.....	.....	.....	.....	8	3
3	Ice and electricity.....	29	29,700	1	750	.....	.....	41	24
2	Ice factories.....	10	13,270	.....	.....	.....	.....	11	9
1	Lighting plants.....	1	1,000	.....	.....	.....	.....	2	1
4	Lumber Mfg.	319	431,160	.....	.....	.....	.....	335	101
2	Naval stores	47	24,939	.....	.....	.....	.....	81	21
4	Fisheries	150	168,728	.....	.....	.....	.....	190	89

5	Fruit packing houses...	346	190,986	92	38,974	.....	.....	635	113
1	Quarry	20	23,000	.....	.....	.....	.....	35	12
1	Repairs and battery wrk	4	7,020	.....	.....	.....	.....	5	2
2	Shoeshop and repairs..	5	6,490	.....	.....	.....	.....	9	5
45	Totals.....	1,080	\$ 1,082,287	96	\$ 41,303	.....	.....	1,587	453

MANUFACTURING REPORT—BREVARD COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Auto sales and repairs.....	.....	.....	.....	.....	\$ 76,170	\$ 105,409
2	Bakeries .....	.....	.....	.....	.....	11,000	17,710
2	Blacksmith shops and repairs. ....	.....	.....	.....	.....	9,600	12,800
4	Building construction.....	.....	.....	.....	.....	103,400	146,500
2	Boat and marine ways.....	.....	.....	.....	.....	14,650	20,100
2	Jeweler and repairs.....	.....	.....	.....	.....	8,950	13,100
2	Barrel factories.....	.....	.....	.....	.....	7,300	11,850
3	Ice and electricity.....	.....	.....	.....	.....	37,900	62,800
2	Ice factories.....	.....	.....	.....	.....	15,600	18,800
1	Lighting plants .....	.....	.....	.....	.....	12,000	18,000
4	Lumber manufacturing.....	.....	.....	.....	.....	455,570	583,370
2	Naval stores .....	.....	.....	.....	.....	.....	.....
4	Fisheries .....	.....	.....	.....	.....	191,400	238,805
5	Fruit packing houses.....	.....	.....	.....	.....	259,810	380,275

1	Quarry .....	.....	.....	.....	.....	11,000	17,000
1	Repairs and battery work....	.....	.....	.....	.....	8,100	12,000
2	Shoe shop and repairs.....	.....	.....	.....	.....	7,560	12,760
45	Totals.....	.....	.....	.....	.....	\$ 1,230,010	\$ 1,671,279

MANUFACTURING REPORT—BREVARD COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
6	Auto sales and repairs..	.....	.....	.....	.....	.....	.....	.....	.....
2	Bakeries .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Blacksmith and repairs..	.....	.....	.....	.....	.....	.....	.....	.....
4	Building construction....	.....	.....	.....	.....	.....	.....	.....	.....
2	Boat and marine ways....	.....	.....	.....	.....	.....	.....	.....	.....
2	Jeweler and repairs.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Barrel factories.....	.....	.....	.....	.....	.....	.....	.....	.....
3	Ice and electricity.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Ice factories .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Lighting plants.....	.....	.....	.....	.....	.....	.....	.....	.....
4	Lumber manufacturing..	.....	.....	.....	.....	.....	.....	.....	.....
2	Naval stores	24,750	35,825	1,400	20,400	.....	.....	.....	.....
4	Fisheries .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Fruit packing house.....	.....	.....	.....	.....	.....	.....	.....	.....

1 Quarry .....	.....	.....	.....	.....	.....	.....	.....	.....
1 Repairs and battery work .....	.....	.....	.....	.....	.....	.....	.....	.....
2 Shoe shop and repairs...	.....	.....	.....	.....	.....	.....	.....	.....
45 Totals.....	24,750	35,825	1,400	20,400	.....	.....	.....	.....

MANUFACTURING REPORT—CLAY COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
2	Garages	\$ 7,500	4	\$ 3,190
4	Naval stores	90,000	147	103,782
2	Blacksmiths	1,400	4	2,500
1	Brick plants	10,000	10	2,500
1	Ice plants	16,000	5	5,000
1	Soft drinks	5,000	3	2,250
4	Grits, feed and rice mills.....	4,300	4	1,875
1	Barrel mills	12,000	35	30,000
1	Water and light	35,000	4	4,800
3	Saw mills	33,000	38	13,100
1	Planing mill	8,000	12	12,000
1	Crate mill	10,000	40	2,600
1	Cotton ginnery	1,500	2	175
21	Totals	\$ 233,700	308	\$ 183,772

MANUFACTURING REPORT—CLAY COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
2	Garages	4	\$ 3,190	.....	\$ .....	.....	\$ .....	4	2
4	Naval stores	147	103,782	.....	.....	.....	.....	195	96
2	Blacksmiths	4	2,500	.....	.....	.....	.....	6	4
1	Brick plants	10	2,500	.....	.....	.....	.....	20	6
1	Ice plants	5	5,000	.....	.....	.....	.....	6	4
1	Soft drinks	3	2,250	.....	.....	.....	.....	3	2
4	Grits, feed, rice mills..	4	1,875	.....	.....	.....	.....	.....	.....
1	Barrel mills	35	30,000	.....	.....	.....	.....	35	25
1	Water and light	4	4,800	.....	.....	.....	.....	.....	.....
3	Saw mills	38	13,100	.....	.....	.....	.....	37	2
1	Planing mills	12	12,000	.....	.....	.....	.....	45	1
1	Crate mills	40	2,600	.....	.....	.....	.....	45	1
1	Cotton ginnery	2	175	.....	.....	.....	.....	.....	.....
21	Totals	308	\$ 183,772	.....	.....	.....	.....	396	143

MANUFACTURING REPORT—CLAY COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (including Custom Work and Repairing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
2	Garages		\$		\$	\$ 3,400	\$ 6,500
4	Naval stores						
2	Blacksmiths					1,700	3,000
1	Brick plants					2,500	4,000
1	Ice plants					9,445	11,115
1	Soft drinks					7,000	8,803
4	Grits, feed and rice mills					850	2,700
1	Barrel mills					50,000	60,000
1	Water and light					12,000	12,000
3	Saw mills					28,500	43,500
1	Planing mill					16,000	17,000
1	Crate mill					11,900	12,473
1	Cotton ginnery					300	500
21	Totals					\$ 143,595	\$ 181,591

MANUFACTURING REPORT—CLAY COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
2	Garages		\$	4,068	\$110,425				
4	Naval stores	60,000	91,067						
2	Blacksmiths								
1	Brick plants								
1	Ice plants								
1	Soft drinks								
4	Grits, feed and rice mills.								
1	Barrel mills								
1	Water and light								
3	Saw mills								
1	Planing mills								
1	Crate mills							3	500
1	Cotton ginnery								
	Totals	60,000	\$ 91,067	4,068	\$110,425			3	\$ 500

MANUFACTURING REPORT—COLUMBIA COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
2	Naval stores	\$ 4,070	50	\$ 15,070
6	Saw mills	41,800	147	341,700
9	Grist mills	33,750	12	4,290
1	Wood mill	1,000	2	1,300
1	Planing mill	15,410	51	72,900
1	Shingle mill	22,000	25	37,900
3	Gineries	35,000	21	3,670
3	Bottling works	8,800	12	10,445
4	Eturpentine stills	25,000	61	193,562
1	Barrel factory	2,000	1	80,000
4	Blacksmith shops	3,500	2	7,220
2	Bicycle shops	212	2	1,780
7	Garage	42,175	34	17,422
2	Optometrists	1,100	2	2,400

1	Machine shop	30,300	12	8,000
1	Cigar factory		4	1,166
1	Vulcanizing	1,000	3	1,200
1	Broom factory	1,000	3	1,000
2	Repair shops	400	3	1,280
1	Tire and battery	5,000	2	2,400
	Totals	\$ 273,517	449	\$ 804,721

MANUFACTURING REPORT—COLUMBIA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
2	Naval stores	70	1,200	.....	.....	.....	\$.....	100	45
6	Saw mills	70	1,200	.....	.....	.....	.....	85	85
9	Grist mills	6	2,500	2	220	.....	.....	18	11
1	Wood mill .....	.....	.....	.....	.....	.....	.....	2	2
1	Planing mill .....	.....	.....	.....	.....	.....	.....	57	51
1	Shingle mill .....	.....	.....	.....	.....	.....	.....	25	25
3	Gineries .....	.....	.....	.....	.....	.....	.....	38	13
3	Bottling works .....	.....	.....	.....	.....	.....	.....	16	11
4	Turpentine stills	25	30,753	2,500	3	.....	.....	93	43
1	Barrel factory	1	8,000	1	.....	.....	.....	.....	.....
4	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	5	2
2	Bicycle shops .....	.....	.....	.....	.....	.....	.....	1	1
7	Garages	14	2,200	1	800	2	.....	39	22
2	Optometrists .....	.....	.....	.....	.....	.....	.....	.....	.....

1	Machine shop .....	.....	8,000	.....	.....	.....	.....	15	10
1	Cigar factory	4	850	.....	.....	.....	.....	4	2
1	Tire and battery.....	.....	.....	.....	.....	.....	.....	2	2
1	Vulcanizing .....	.....	.....	.....	.....	.....	.....	1	1
1	Broom factory .....	.....	.....	.....	.....	.....	.....	3	3
2	Repair shops .....	.....	.....	.....	.....	.....	.....	6	3
Total		190	\$ 54,700	2,503	\$ 1,023	2	455	354	33

MANUFACTURING REPORT—COLUMBIA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Saw mills					\$ 132,000	\$ 200,000
9	Grist mills					19,250	53,850
1	Wood mill						
1	Planing mill						
1	Shingle mill						
3	Gineries					30,150	1,000
3	Bottling works					2,300	5,000
4	Turpentine stills					1,500	
1	Barrel factory						
4	Blacksmith shops					9,000	30,000
2	Bicycle shops						
7	Garages					500	
2	Optometrists						
2	Machine shop					200	1,400
1	Cigar factory	144,600	\$ 5,998				

1	Tire and battery .....	.....	.....	.....	.....	.....	.....
1	Vulcanizing .....	.....	.....	.....	.....	.....	.....
1	Broom factory .....	.....	.....	.....	.....	.....	.....
2	Repair shops .....	.....	.....	.....	.....	.....	.....
Total		144,600	5,998	.....	.....	194,900	291,250

MANUFACTURING REPORT—COLUMBIA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
2	Naval stores	15,000	\$ 20,000	700	\$ 6,000	.....	.....	.....	.....
6	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
9	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Wood mill .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Planing mill .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Shingle mill .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Ginneries .....	.....	.....	.....	.....	205	75,000	253	368,970
3	Battery works .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Turpentine stills	34,590	20,000	69,630	20,080	.....	.....	.....	.....
1	Barrel factory .....	.....	.....	30,000	3,000	.....	.....	.....	.....
4	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Bicycle shops .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Optometrists .....	.....	.....	.....	.....	.....	.....	.....	.....

1	Machine shop .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Cigar factory .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Tire and battery .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Vulcanizing .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Broom factory .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
Total		49,590	\$ 40,000	100,330	\$ 29,080	205	\$ 75,000	253	\$ 368,970

MANUFACTURING REPORT—CALHOUN COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
11	Naval stores	\$ 727,800	298	\$ 203,550
2	Saw mills	304,000	150	57,155
1	Cotton gin	3,000	3	1,250
4	Grist mills	2,950	6	1,200
2	Blacksmith shops	600	4	1,200
	Totals	\$ 1,038,350	461	\$ 264,355

MANUFACTURING REPORT—CALHOUN COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
11	Naval stores	298	\$ 203,550	.....	\$ .....	.....	.....	409	238
2	Saw mills	150	57,155	.....	.....	.....	.....	177	143
1	Cotton gin	3	1,250	.....	.....	.....	.....	3	3
4	Grist mills	6	1,200	.....	.....	.....	.....	6	4
2	Blacksmith shops	4	1,200	.....	.....	.....	.....	4	2
	Totals	461	\$ 264,355	.....	.....	.....	.....	599	410

MANUFACTURING REPORT—CALHOUN COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
11	Naval stores .....	.....	\$ .....	.....	\$ .....	\$ .....	\$ .....
2	Saw mills .....	.....	.....	.....	.....	90,538	115,000
1	Cotton gin .....	.....	.....	.....	.....	.....	.....
4	Grist mills .....	.....	.....	.....	.....	1,325	4,200
2	Blacksmith shops .....	.....	.....	.....	.....	200	1,850
	Totals .....	.....	.....	.....	.....	\$ 92,063	\$ 121,050

MANUFACTURING REPORT—CALHOUN COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
11	Naval stores	192,550	\$231,463	12,721	213,325	.....	.....	.....	\$.....
2	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Cotton gin .....	.....	.....	.....	.....	176	22,000	.....	.....
4	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals	192,550	\$231,465	12,721	\$213,325	176	\$ 22,000	.....	\$.....

MANUFACTURING REPORT—DESOTO COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Average Number
21	Blacksmith shops	4,300	11	9,800
5	Bakeries	2,600	10	6,500
5	Boatbuilding plants	12,500	13	19,700
3	Bicycle shops.....	2,000	5	2,000
5	Blue print shops.....	1,200	5	1,250
7	Bottling works.....	40,000	27	24,000
16	Cross tie Mfgs.....	11,600	97	92,000
1	Coffee roaster.....	200	1	300
2	Chair Mfgs.	400	2	1,200
3	Crate Mfgs.	633,000	365	350,000
3	Cigar Mfgs.	2,600	11	9,000
1	Candy Mfg.	100	1	400
2	Concrete Mfg.	33,500	11	11,000
19	Dressmaking establishments	2,750	22	7,950

1	Electric Co.	7,600	59	19,800
6	Fishing industries.....	147,000	99	109,500
1	Furniture repair shop.....	400	1	400
6	Grist mills	4,700	12	2,400
43	Garages	57,448	148	158,000
18	Hat repair shops.....	100	1	150
80	Irrigation plants	41,500	83	9,100
4	Ice Mfgs.	157,000	56	6,900
15	Millineries	5,650	19	8,800
14	Naval stores	220,300	252	288,400
4	Photograph galleries	2,350	4	2,400
29	Packing houses	185,500	541	502,000
9	Printing plants	66,500	40	30,340
50	Repair shops	48,850	99	73,800
22	Saw mills	1,183,700	785	789,500
250	Syrup mills	43,730	493	27,595
17	Tailor shops	44,350	17	7,000
5	Vulcanizing	2,800	6	7,000
Totals.....		\$ 2,966,288	3,246	\$ 2,640,585

MANUFACTURING REPORT—DESOTO COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
21	Blacksmith shops	11	\$ 9,800	.....	.....	.....	.....	22	11
5	Bakeries	10	6,500	.....	.....	.....	.....	15	11
5	Boat building	17	18,700	.....	.....	.....	.....	21	9
3	Bicycle shops	5	2,000	.....	.....	.....	.....	6	3
5	Blue print	5	1,250	.....	.....	.....	.....	10	5
7	Bottling works	25	24,000	.....	.....	.....	.....	29	19
16	Cross tie Mfgs.	97	97,000	.....	.....	.....	.....	97	49
1	Coffee roaster	1	300	.....	.....	.....	.....	2	1
2	Chair Mfgs.	2	1,200	.....	.....	.....	.....	2	2
3	Crate Mfgs.	310	307,000	55	34,000	.....	.....	380	306
3	Cigar Mfgs.	9	9,000	4	2,600	.....	.....	11	7
1	Candy Mfg.	1	400	.....	.....	.....	.....	2	1
2	Concrete Mfg.	11	11,000	.....	.....	.....	.....	12	5
19	Dressmaking .....	.....	.....	22	7,950	.....	.....	41	19

1	Electric Co.	59	19,550	.....	.....	.....	131	77
6	Fishing industries	99	109,500	.....	.....	.....	63	35
1	Furniture repair shop..	1	400	.....	.....	.....	2	1
6	Grist mills	12	2,300	.....	.....	.....	20	6
43	Garages	148	157,000	.....	.....	.....	148	90
18	Hat repair shops.....	.....	.....	1	150	.....	2	1
80	Irrigation plants	74	10,195	.....	.....	.....	170	83
4	Ice Mfgs.	50	70,000	.....	.....	.....	59	44
15	Millineries .....	.....	.....	19	8,800	.....	32	15
14	Naval stores	235	211,000	.....	.....	.....	288	174
4	Photograph galleries ..	4	2,200	.....	.....	.....	8	4
29	Packing houses	407	548,000	53	21,000	.....	601	359
9	Printing	39	29,500	4	2,000	.....	45	28
50	Repair shops	98	73,800	.....	.....	.....	150	67
22	Saw mills	785	789,500	.....	.....	.....	912	594
250	Syrup mills	493	27,595	.....	.....	.....	360	260
17	Tailor shops	17	7,300	.....	.....	.....	31	17
5	Vulcanizing	6	7,000	.....	.....	.....	8	3
Totals.....		3,031	\$ 2,552,990	158	\$ 76,500	.....	3,880	2,306

MANUFACTURING REPORT—DESOTO COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
21	Blacksmith shops		\$		\$	660	\$ 4,300
5	Bakeries					1,300	6,300
5	Boatbuilding					2,900	25,400
3	Bicycle shops					180	1,700
5	Blue print					175	950
7	Bottling works.....					3,550	57,000
16	Cross tie Mfgs.....					3,000	19,000
1	Coffee roaster					50	500
2	Chair Mfgs.					80	750
3	Crate Mfgs.					80,000	950,000
3	Cigar Mfgs.	200,000	10,000				
1	Candy Mfgs.					40	500
2	Concrete Mfg.					1,150	8,000
19	Dress making					930	6,450

1	Electric Co.					12,300	80,900
6	Fishing industries					20,900	198,600
1	Furniture repair shop.....					50	600
6	Grist mills					1,375	8,400
43	Garages					17,000	169,400
18	Hat repair shops.....					50	200
80	Irrigation plants					4,480	54,500
4	Ice Mfgs.					9,700	210,000
15	Millineries					4,300	17,800
14	Naval stores						
4	Photograph galleries					850	,600
29	Packing houses					65,900	455,100
9	Printing shops					10,600	80,000
50	Repair shops					8,035	94,000
22	Saw mills					100,900	1,447,000
250	Syrup mills					14,175	69,270
17	Tailoring shops					805	8,750
5	Vulcanizing					600	2,600
	Totals.....	20,000	10,000			\$ 366,035	\$ 3,979,570

MANUFACTURING REPORT—DESOTO COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
21	Blacksmithing .....	.....	\$.....	.....	\$.....	.....	\$.....	.....	\$.....
5	Bakeries .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Boat building .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Bicycle shops .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Blue print .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
16	Cross tie Mfgs. ....	.....	.....	.....	.....	.....	.....	.....	.....
1	Coffee roaster .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Chair Mfgs. ....	.....	.....	.....	.....	.....	.....	.....	.....
3	Crate Mfge. ....	.....	.....	.....	.....	.....	.....	.....	.....
3	Cigar Mfgs. ....	.....	.....	.....	.....	.....	.....	.....	.....
1	Candy Mfg. ....	.....	.....	.....	.....	.....	.....	.....	.....
2	Concrete Mfg. ....	.....	.....	.....	.....	.....	.....	.....	.....
19	Dun making .....	.....	.....	.....	.....	.....	.....	.....	.....

1	Electric Co. ....	.....	.....	.....	.....	.....	.....	.....	.....
6	Fishing Industries .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Furniture repair shops..	.....	.....	.....	.....	.....	.....	.....	.....
6	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
43	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
18	Hat repair shops.....	.....	.....	.....	.....	.....	.....	.....	.....
80	Irrigation plants .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Ice Mfgs. ....	.....	.....	.....	.....	.....	.....	.....	.....
15	Millineries .....	.....	.....	.....	.....	.....	.....	.....	.....
14	Naval stores	560,000	852,000	2,995	\$149,000	.....	.....	.....	.....
4	Photography .....	.....	.....	.....	.....	.....	.....	.....	.....
29	Packing houses .....	.....	.....	.....	.....	.....	.....	.....	.....
9	Printing .....	.....	.....	.....	.....	.....	.....	.....	.....
50	Repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
22	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
250	Syrup mills .....	.....	.....	.....	.....	.....	.....	.....	.....
17	Tailoring .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Vulcanizing .....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals.....	560,000	\$825,000	2,995	\$149,000	.....	\$.....	.....	\$.....

MANUFACTURING REPORT—DUVAL COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
1	Adding Machine Repairing Cos.....	\$ 1,750	5	\$ 7,600
49	Automobile Repair Cos.....	128,700	223	357,350
19	Bakeries	309,100	230	269,581
10	Bottling Works	339,500	94	125,460
17	Bicycle Repair Works.....	15,600	25	24,550
11	Blacksmiths	4,350	16	17,608
2	Bag factories	17,000	28	22,800
1	Broom Factory	10,000	6	7,000
6	Concrete Stone and Tile Co.....	54,500	69	75,860
1	Chemical Mfg. Co.	25,000	10	14,000
3	Candy Mfg. Co.	40,000	29	23,100
2	Cabinet Maker Shops	13,000	23	40,600
1	Cracker Mfg. Works.....	140,000	95	78,000
21	Cigar Mfg. Cos.....	347,900	512	677,680

49	Dyeing Cos.	46,850	115	95,066
1	Electric Mfg. Co.	2,000	6	12,606
6	Fertilizer Mfg. Cos.	2,555,519	884	1,083,830
2	Glass Mfg. Cos.	15,000	5	7,100
6	Has Mfg. Cos.	25,900	25	29,368
2	Harness Mfg. Cos.	4,500	6	9,200
5	Ice Mfg. Cos.	567,393	249	167,040
4	Ice Cream Mfg. Co.	738,000	159	184,200
10	Jewelry Mfg. Cos.	10,800	33	63,390
2	Locksmiths	2,300	3	6,250
10	Laundries and Renovators.	388,200	365	294,494
17	Machine Shops	346,250	433	618,990
7	Mattress Mfg. Cos.	47,000	49	38,150
8	Millinery Mfg. Cos.	11,500	41	43,325
5	Optical Cos.	15,000	8	14,700
20	Printing Cos.	677,100	246	399,348
3	Preserving Cos.	6,000	6	5,000
1	Perfumery Co.	1,000	4	3,500
1	Paper Box Mfg. Co.	15,000	20	18,000
25	Plumbing Co.	58,000	97	130,870
7	Rug and Carpet Mending Co.	6,300	11	10,250
4	Sheet Metal Mfg. Cos.	42,500	37	52,950
8	Saw mills	7,275,849	1364	1,397,288
41	Shoe Factories	30,600	73	90,550
4	Typewriter Repairing Cos.	3,700	9	11,000

MANUFACTURING REPORT—DUVAL COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
1	Trunk Factory	500	1	1,200
35	Tailors	77,000	139	162,860
1	Towel Mfg. Co.....	5,000	6	4,900
1	Tent and Awning Co.....	5,600	10	9,800
4	Turpentine Mfg. Cos.....	85,000	127	80,038
1	Umbrella Mfg. Co.....	1,500	2	1,500
16	Vulcanizing Cos.....	19,500	33	34,200
1	Vinegar Mfg. Co.....	13,000	18	16,100
1	Wood Product Co.....	150,000	150	190,000
4	Wagon and Carriage Mfg Cos.....	38,500	73	100,150
1	Wall Paper Co.....	15,000	38	40,700
	Totals	\$ 12,449,261	6,210	\$ 7,169,096

MANUFACTURING REPORT—DUVAL COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE,	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
1	Adding Machine Repair- ing Co.	5	\$ 7,600	.....	\$ .....	.....	\$ .....	5	5
49	Automobile Repair Cos.	223	357,350	.....	.....	.....	.....	263	173
19	Bakeries	198	243,349	32	26,332	.....	.....	236	220
10	Bottling Works	94	125,460	.....	.....	.....	.....	119	82
17	Bicycle Repair Works..	25	24,550	.....	.....	.....	.....	25	22
11	Blacksmiths	16	17,608	.....	.....	.....	.....	16	16
2	Bag Factories	6	6,800	22	16,000	.....	.....	32	24
1	Broom Factory	6	7,000	.....	.....	.....	.....	7	5
6	Concrete Stone and Tile Co.	69	75,860	.....	.....	.....	.....	95	55
1	Chemical Mfg. Co.....	8	12,000	2	2,000	.....	.....	12	8
3	Candy Mfg. Cos.....	14	17,600	15	5,500	.....	.....	33	23
2	Cabinet Maker Shops..	22	39,400	1	1,200	.....	.....	29	17
1	Cracker Mfg. Works...	47	42,000	48	21,000	.....	.....	100	70

MANUFACTURING REPORT—DUVAL COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
21	Cigar Mfg. Cos.....	442	622,530	70	54,550	.....	.....	579	457
49	Dyeing Cos.....	79	71,746	36	23,320	.....	.....	124	95
1	Electric Mfg. Co.....	6	12,600	.....	.....	.....	.....	8	6
6	Fertilizer Mfg. Cos....	833	1,033,243	51	50,886	.....	.....	900	800
2	Glass Mfg. Cos.....	5	7,100	.....	.....	.....	.....	6	4
6	Hat Mfg. Cos.....	11	15,800	14	13,568	.....	.....	32	20
2	Harness Mfg. Cos.....	6	9,200	.....	.....	.....	.....	6	6
5	Ice Mfg. Cos.....	249	167,040	.....	.....	.....	.....	262	208
4	Ice Cream Mfg. Cos....	134	159,500	25	24,700	.....	.....	170	146
10	Jewelry Mfg. Cos.....	33	63,390	.....	.....	.....	.....	44	29
2	Locksmiths	3	6,250	.....	.....	.....	.....	3	3
10	Laundries and Renova- tors	80	128,604	284	186,690	.....	.....	402	310
17	Machine Shops	230	616,190	3	2,800	.....	.....	495	364
7	Mattress Mfg. Cos.....	21	23,650	28	14,500	.....	.....	55	35

8	Millinery Mfg. Cos.....	.....	.....	41	43,325	.....	.....	48	34
5	Optical Cos.....	7	13,800	1	900	.....	.....	8	8
20	Printing Cos.....	203	356,719	43	166,021	.....	.....	262	231
3	Pressing Cos.	2	2,000	4	3,000	.....	.....	7	4
1	Perfumery Co.	2	1,800	2	1,700	.....	.....	5	3
1	Paper Box Mfg. Co....	4	6,000	16	12,000	.....	.....	20	18
25	Plumbing Cos.....	95	125,810	2	1,860	.....	.....	113	81
7	Rug and Carpet Mend- Cos.	8	7,700	3	2,550	.....	.....	14	8
4	Sheet Metal Mfg. Cos..	37	52,950	.....	.....	.....	.....	29	20
8	Saw mills	1,284	1,331,288	80	66,000	.....	.....	1,504	1,237
41	Shoe factories	73	90,550	.....	.....	.....	.....	79	61
4	Typewriter Repair'g Co.	9	11,000	.....	.....	.....	.....	9	9
1	Trunk factory	1	1,200	.....	.....	.....	.....	1	1
35	Tailors	120	148,000	18	14,860	.....	.....	167	112
1	Towel Mfg. Co.....	3	3,000	3	1,900	.....	.....	7	4
1	Tent and Awning Co..	6	6,800	4	3,000	.....	.....	10	5
4	Turpentine Mfg. Cos...	127	80,038	.....	.....	.....	.....	141	115
1	Umbrella Mfg. Co.....	.....	.....	2	1,500	.....	.....	2	2
16	Vulcanizing Cos.....	33	34,200	.....	.....	.....	.....	33	31
1	Vinegar Mfg. Co.....	11	10,600	7	5,500	.....	.....	20	15
1	Wood Product Co.....	149	189,000	1	1,000	.....	.....	155	145
4	Wagon and Carriage Mfg. Cos.....	73	100,150	.....	.....	.....	.....	84	65
1	Wall Paper Cos.....	38	40,700	.....	.....	.....	.....	46	31
Totals		5,150	\$ 6,526,725	858	\$ 768,162	.....	.....	6,822	5,443

MANUFACTURING REPORT—DUVAL COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Fertilizer Mfg. Cos.....	.....	.....	.....	.....	9,084,765	10,261,644
2	Glass Mfg. Cos.....	.....	.....	.....	.....	18,450	26,400
6	Hat Mfg. Cos.....	.....	.....	.....	.....	67,960	86,020
2	Harness Mfg. Cos.....	.....	.....	.....	.....	17,500	21,600
5	Ice Mfg. Cos.....	.....	.....	.....	.....	1,249,158	1,414,322
4	Ice Cream Mfg. Cos.....	.....	.....	.....	.....	554,000	693,000
10	Jewelry Mfg. Cos.....	.....	.....	.....	.....	85,528	112,590
2	Locksmiths .....	.....	.....	.....	.....	9,400	13,250
10	Laundries and Renovatories..	.....	.....	.....	.....	404,350	522,630
17	Machine Shops .....	.....	.....	.....	.....	742,728	867,845
7	Mattress Mfg. Cos.....	.....	.....	.....	.....	80,200	102,500
8	Millinery Mfg. Cos.....	.....	.....	.....	.....	68,160	93,800
5	Optical Cos. ....	.....	.....	.....	.....	251,000	39,000
20	Printing Cos. ....	.....	.....	.....	.....	913,431	1,184,885

3	Pressing Cos.					15,000	25,000
1	Perfumery Cos.					6,500	8,500
1	Paper Box Mfg. Co.					25,000	38,000
25	Plumbing Cos.					251,040	359,173
7	Rug and Carpet Mending Co.					19,100	26,700
4	Sheet Metal Mfg. Cos.					88,800	112,100
8	Saw mills					3,115,628	3,531,961
41	Shoe factories					148,105	213,235
4	Typewriter Repairing Cos.					22,300	33,600
1	Trunk factory					2,000	3,000
35	Tailors					322,550	397,550
1	Towel Mfg. Co.					6,000	9,000
1	Adding Machine Repairing Co.					14,650	23,300
43	Automobile Repair Cos.					674,597	895,696
19	Bakeries					849,600	1,196,933
10	Bottling Works					246,482	339,200
17	Bicycle Repair Works.					43,650	69,700
11	Blacksmiths					31,150	49,340
2	Bag Factories					44,000	54,500
1	Broom Factory					18,000	21,000
6	Concrete Stone and Tile Cos.					153,800	191,480
1	Chemical Mfg. Co.					25,000	35,000
3	Candy Mfg. Cos.					116,760	166,100
2	Cabinet Maker Shops.					59,380	72,948
1	Cracker Mfg. Works.					464,991	478,929

MANUFACTURING REPORT—DUVAL COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
21	Cigar Mfg. Cos.....	21,452,513	1,832,446	.....	.....	.....	.....
49	Dyeing Cos. ....	.....	.....	.....	.....	137,562	207,290
1	Electric Mfg. Co.....	.....	.....	.....	.....	18,600	24,800
1	Tent and Awning Co.....	.....	.....	.....	.....	18,800	26,000
4	Turpentine Mfg. Cos.....	.....	.....	.....	.....	.....	.....
1	Umbrella Mfg. Co.....	.....	.....	.....	.....	3,000	4,500
16	Vulcanizing Cos. ....	.....	.....	.....	.....	65,300	91,540
1	Vinegar Mfg. Co.....	.....	.....	.....	.....	27,000	44,600
1	Wood Product Co.....	.....	.....	.....	.....	380,000	400,000
4	Wagon and Carriage Mfg. Cos. ....	.....	.....	.....	.....	193,730	237,996
1	Wall Paper Co. ....	.....	.....	.....	.....	70,850	91,500
	Totals	21,452,513	\$ 1,832,446	.....	.....	\$20,999,655	\$ 15,684,157

MANUFACTURING REPORT—DUVAL COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
	Naval Stores	48,275	\$ 72,413	2,850	\$ 88,480	.....	\$.....	.....	\$.....

MANUFACTURING REPORT—FRANKLIN COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Average Number
17	Fish and opster industries.....	\$ 145,000	606	\$
14	Naval stores	134,000	510	
	Ice plants	50,000	16	
	Saws mills	5,000	2	
	Printing	5,000	4	
	Lumber and shingles	340,000	245	
	Marine Ways	8,500	25	
10	Shops	76,000	22	
4	Ship repairing	45,000	7	
1	Cigar manufactory	500	2	
	Bakeries	1,000	2	
	1.....	\$ 810,000	1,441	

MANUFACTURING REPORT—FRANKLIN COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
17	Fish and oyster industries	546	.....	60	6	.....	.....	690	109
14	Naval stores	460	.....	.....	.....	.....	.....	522	350
	Ice plants	16	.....	.....	.....	.....	.....	18	15
	Saw mills	2	.....	.....	.....	.....	.....	2	2
	Printing	2	.....	.....	.....	.....	.....	2	2
	Lumber and shingles ..	245	.....	.....	.....	.....	.....	295	121
	Marine Ways	25	.....	.....	.....	.....	.....	30	4
10	Shops	22	.....	.....	.....	.....	.....	22	22
4	Ship repairing	7	.....	.....	.....	.....	.....	8	7
1	Cigar factory	2	.....	.....	.....	.....	.....	2	2
	Bakeries	2	.....	.....	.....	.....	.....	2	2
		1,929	.....	60	6	.....	.....	1,593	636

MANUFACTURING REPORT—FRANKLIN COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
17	Fish and oyster industries.....					\$ 179,600	\$ 243,000
14	Naval stores						
	Ice plants					13,000	23,000
	Saw mills					3,500	4,500
	Printing					3,500	4,500
	Lumber and shingles					300,000	400,000
	Marine Ways					8,500	11,500
10	Shops					65,800	80,000
4	Ship repairing					5,100	7,800
1	Cigar factory					1,500	2,500
	Bakeries					1,500	2,500
	Total.....					\$ 584,000	779,300

MANUFACTURING REPORT—FRANKLIN COUNTY.—(Continued).

11—Part 2-3—Agrl.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
17	Fish and oyster industries	.....	.....	.....	.....	.....	.....	.....	.....
14	Naval stores	190,000	\$190,000	11,850	\$165,900	.....	.....	.....	.....
	Ice plants	.....	.....	.....	.....	.....	.....	.....	.....
	Saw mills	.....	.....	.....	.....	.....	.....	.....	.....
	Printing	.....	.....	.....	.....	.....	.....	.....	.....
	Lumber and shingles	.....	.....	.....	.....	.....	.....	.....	.....
	Marine Ways	.....	.....	.....	.....	.....	.....	.....	.....
10	Shops	.....	.....	.....	.....	.....	.....	.....	.....
4	Ship repairing	.....	.....	.....	.....	.....	.....	.....	.....
1	Cigar factory	.....	.....	.....	.....	.....	.....	.....	.....
	Bakeries	.....	.....	.....	.....	.....	.....	.....	.....
	Total	190,000	190,000	11,850	165,900	.....	.....	.....	.....

MANUFACTURING REPORT—HILLSBOROUGH COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
21	Bakeries	\$ 111,200	130	\$ 176,882
13	Bicycle and motorcycle shops.....	19,000	30	35,828
16	Blacksmith shops	21,750	41	60,932
5	Bottling works	159,000	64	63,544
6	Box factories	216,200	633	600,000
5	Candy factories	18,600	12	14,976
140	Cigar factories	6,923,950	14,649	17,436,032
10	Coffee mills	57,000	25	34,320
17	Coal burners	4,325	52	49,900
42	Contractors	306,300	622	875,134
8	Cross tie mfgs.	7,020	54	45,760
55	Drug manufactories	88,250	85	134,756
25	Furniture repairs	45,280	35	37,778
104	Garage repairs	261,070	315	469,474

17	Turpentine stills	\$ 122,500	342	97,700
10	Saw mills	13,000	89	24,350
12	Grist mills	4,440	23	2,430
3	Planing mills	7,100	95	47,000
5	Ginneries	9,300	26	2,880
6	Repair shops	2,350	8	4,530
1	Electric shop and plant	6,000	2	3,000
1	Bottling works	1,000	3	1,500
1	Shingle mill	1,500	8	1,500
4	Millinery stores	3,600	4	1,950
5	Harness makers	8,100	5	7,280
12	Ice cream factories	29,800	41	46,164
8	Ice factories	490,000	160	192,768
25	Jewelers and repair shops	22,700	37	46,412
12	Laundries	71,250	224	180,741
6	Macaroni factories	25,500	30	26,516
12	Machine and iron works	206,600	123	196,870
49	Meat markets—mfg. department	15,350	53	58,672
75	Milliners and dress makers	59,772	127	123,470
69	Miscellaneous manufacturing	4,279,600	581	720,700
4	Naval stores	47,000	115	78,000
6	Novelty works	57,500	32	51,896
5	Opticians	8,500	9	14,040
9	Photo print works	6,600	24	30,732
12	Plumbers	30,200	62	104,350

MANUFACTURING REPORT—HILLSBOROUGH COUNTY—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
5	Rubber tire works.....	5,500	11	14,040
19	Saw mills	1,607,200	693	697,412
6	Shipbuilding and marine ways.....	580,000	1,957	327,392
50	Shoe makers	32,625	92	78,704
71	Tailors and pressing clubs.....	58,175	166	197,900
18	Wood yards	32,850	93	79,224
15	Printers and bookbinders.....	83,600	80	113,889
	Total.....	\$ 29,520,984	21,462	\$ 23,422,488

MANUFACTURING REPORT—HILLSBOROUGH COUNTY—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
21	Bakeries	106	\$ 149,582	24	\$ 27,300	.....	.....	130	130
13	Bicycles, motor cycles..	29	34,892	1	936	.....	.....	30	30
16	Blacksmith shops	40	39,532	1	1,400	.....	.....	41	41
5	Bottling works	54	59,176	10	4,368	.....	.....	64	64
6	Box factories	313	294,424	320	303,576	.....	.....	633	633
5	Candy factories	7	9,256	5	5,720	.....	.....	12	12
140	Cigar factories	10,763	12,829,956	3,886	4,606,076	.....	.....	14,649	14,649
10	Coffee mills	25	34,320	.....	.....	.....	.....	25	25
17	Coal burners	52	49,900	.....	.....	.....	.....	52	52
42	Contractors	620	872,170	2	2,964	.....	.....	622	622
8	Cross tie mfgs.	54	45,760	.....	.....	.....	.....	54	54
55	Drug manufactories ...	85	134,756	.....	.....	.....	.....	85	85
25	Furniture repairs	34	36,738	1	1,040	.....	.....	35	35
104	Garage repairs	306	457,680	9	11,794	.....	.....	315	315

MANUFACTURING REPORT—HILLSBOROUGH COUNTY—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
5	Harness makers	5	7,280	.....	.....	.....	.....	5	5
12	Ice cream factories....	33	36,700	8	9,464	.....	.....	41	41
8	Ice factories	159	191,520	1	1,248	.....	.....	160	160
25	Jeweler and repair shops	34	42,772	3	3,640	.....	.....	37	37
12	Laundries :.....	90	81,640	134	99,101	.....	.....	224	224
6	Macaronni factories ...	30	26,516	.....	.....	.....	.....	30	30
13	Machine and iron works	122	195,310	1	1,560	.....	.....	123	123
49	Meat markets—mfg.....	53	58,072	.....	.....	.....	.....	53	53
75	Milliners, dress makers.	2	2,240	125	121,230	.....	.....	127	127
69	Miscellaneous mfg.	533	677,644	48	43,056	.....	.....	581	581
4	Naval stores	115	\$ 78,000	.....	.....	.....	.....	115	115
6	Novelty works	32	51,896	.....	.....	.....	.....	32	32
5	Opticians	9	14,040	.....	.....	.....	.....	9	9
9	Photo print works.....	16	20,696	8	\$ 10,036	.....	.....	24	24

12	Plumbers	59	99,562	3	4,786	.....	.....	62	62
15	Printers, book binders..	60	86,389	19	27,040	1	260	80	80
5	Rubber tire works.....	11	14,040	.....	.....	.....	.....	11	11
19	Saw mills	691	694,292	2	3,120	.....	.....	693	693
6	Shipbldrs, marine ways	1,948	313,144	9	14,248	.....	.....	1,957	1,957
50	Shoe makers	86	72,464	6	6,240	.....	.....	92	92
71	Tailors and press. clubs	141	168,216	25	29,684	.....	.....	166	166
18	Wood yards	73	70,072	1	936	19	8,216	93	93
Total.....		16,790	\$18,071,447	4,650	\$5,340,563	20	\$ 8,476	21,462	21,462

MANUFACTURING REPORT—HILLSBOROUGH COUNTY—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (including Custom Work and Repairing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
21	Bakeries .....	.....	.....	.....	.....	\$ 331,472	\$ 751,600
13	Bicycles and motorcycles .....	.....	.....	.....	.....	66,570	132,540
16	Blacksmith shops .....	.....	.....	.....	.....	111,790	265,680
5	Bottling works .....	.....	.....	.....	.....	117,700	325,800
6	Box factories .....	.....	.....	.....	.....	489,500	1,301,822
5	Candy factories .....	.....	.....	.....	.....	72,320	164,120
140	Cigar factories	517,653,986	\$ 34,148,749	.....	.....	.....	.....
10	Coffee mills .....	.....	.....	.....	.....	75,135	175,360
17	Coal burners .....	.....	.....	.....	.....	68,200	104,020
42	Contractors .....	.....	.....	.....	.....	2,045,350	4,242,265
8	Cross tie mfgs. ....	.....	.....	.....	.....	61,876	98,390
55	Drug manufactories .....	.....	.....	.....	.....	235,473	464,226
25	Furniture repairs .....	.....	.....	.....	.....	77,706	174,790
104	Garage repairs .....	.....	.....	.....	.....	1,050,702	2,009,110

5	Harness makers					18,060	43,000
12	Ice cream factories.....					179,290	409,600
8	Ice factories					364,000	883,000
25	Jeweler and repair shops.....					92,430	178,170
12	Laundries					275,030	468,000
6	Macaronni factories					62,610	129,900
12	Machine and iron works.....					413,900	843,000
49	Meat markets—mfg. dept.....					109,840	239,495
75	Milliners and dress makers...					126,720	308,960
69	Miscellaneous mfg.					1,500,070	4,124,320
4	Naval stores						
6	Novelty works				\$	92,550	\$ 175,000
5	Opticians					34,880	63,700
9	Photo print works.....					47,250	80,900
12	Plumbers					184,960	309,200
15	Printers and book binders....					175,580	318,658
5	Rubber tire works.....					35,400	63,500
19	Saw mills					1,682,660	3,898,700
6	Shipbuilding and marine wks.					1,676,760	6,343,920
50	Shoe makers					172,810	308,900
71	Tailors and pressing clubs...					362,038	607,620
18	Wood yards					168,930	288,580
	Total	517,653,780	\$ 34,148,749			\$12,579,562	\$ 20,296,386

MANUFACTURING REPORT—HILLSBOROUGH COUNTY—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
4	Naval stores	86,500	\$108,125	450	73,500	.....	.....	.....	.....
6	Novelty works .....	.....	82	900	.....	.....	.....	.....	.....
5	Opticians .....	.....	28	650	.....	.....	.....	.....	.....
9	Photo print works.....	.....	33	240	.....	.....	.....	.....	.....
12	Plumbers .....	.....	114	078	.....	.....	.....	.....	.....
15	Printers and book b'nd'rs .....	.....	143	100	.....	.....	.....	.....	.....
5	Rubber tire works.....	.....	28	040	.....	.....	.....	.....	.....
19	Saw mills .....	.....	2,216	160	.....	.....	.....	.....	.....
6	Shipbldrs, marine ways. ....	.....	4,667	090	.....	.....	.....	.....	.....
50	Shoe makers .....	.....	136	582	.....	.....	.....	.....	.....
71	Tailors and press. clubs.. ..	.....	245	650	.....	.....	.....	.....	.....
18	Wood yards .....	.....	119	4,500	\$ 73,500	.....	.....	.....	.....
	Total.....	86,500	\$108,125	4,500	\$ 73,500	.....	.....	.....	.....

MANUFACTURING REPORT—HOLMES COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements,	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
3	Auto repair shops.....	\$ 18,749	14	\$ 9,111
3	Blacksmiths	850	4	1,150
2	Feed mills	2,900	8	1,325
5	Ginneries	5,187	16	1,423
7	Grist Mills	5,250	10	3,341
3	Naval stores	143,111	93	109,106
8	Saw mills	411,092	384	273,788
31	Totals.....	\$ 587,139	529	\$ 399,244

MANUFACTURING REPORT—HOLMES COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
3	Auto repair shops.....	14	\$ 9,111	.....	\$ .....	.....	.....	18	11
3	Blacksmiths	4	1,150	.....	.....	.....	.....	5	3
2	Feed mills	8	1,325	.....	.....	.....	.....	13	3
	Ginneries	15	1,403	.....	.....	1	20	18	9
7	Grist mills	10	2,341	.....	.....	.....	.....	12	8
3	Naval stores	93	109,106	.....	.....	.....	.....	99	84
8	Saw mills	384	273,788	.....	.....	.....	.....	451	276
	Totals.....	528	\$ 399,224	.....	.....	1	20	616	394

MANUFACTURING REPORT—HOLMES COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
3	Auto repair shops.....	.....	\$.....	.....	\$.....	\$ 9,108	\$ 15,039
3	Blacksmiths .....	.....	.....	.....	.....	2,650	3,950
2	Feed mills .....	.....	.....	.....	.....	2,075	3,150
5	Gineries .....	.....	.....	.....	.....	2,400	.....
7	Grist mills .....	.....	.....	.....	.....	1,382	6,426
3	Naval stores .....	.....	.....	.....	.....	.....	.....
8	Saw mills .....	.....	.....	.....	.....	348,552	679,392
	Totals.....	.....	.....	.....	.....	\$ 366,167	\$ 707,957

MANUFACTURING REPORT—HOLMES COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Is- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
3	Auto repair shops.....	.....	.....	.....	\$.....	.....	\$.....	.....	\$.....
3	Blacksmiths .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Feed mills .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Ginneries .....	.....	.....	.....	.....	711	2,541.50	.....	.....
7	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Naval stores	98,625	\$ 22,749	7,186	103,563	.....	.....	.....	.....
8	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals.....	98,625	\$ 22,749	7,186	\$103,563	711	\$ 2,541	.....	.....

MANUFACTURING REPORT—HAMILTON COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
17	Turpentine stills	\$ 122,500	342	97,700
10	Saw mills	13,000	89	24,350
12	Grist mills	4,440	23	2,430
3	Planing mills	7,100	95	47,000
5	Ginneries	9,300	26	2,880
6	Repair shops	2,350	8	4,530
1	Electric shop and plant	6,000	2	3,000
1	Bottling works	1,000	3	1,500
1	Shingle mill	1,500	8	1,500
4	Millinery stores	3,600	4	1,950
60	Total	\$ 170,795	603	\$ 186,840

MANUFACTURING REPORT—HAMILTON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
17	Turpentine stills	326	\$ 97,700	.....	.....	.....	.....	404	281
10	Saw mills	65	24,350	.....	.....	.....	.....	106	71
12	Grist mills	23	2,430	.....	.....	.....	.....	23	23
3	Planing mills	80	47,000	.....	.....	.....	.....	109	69
5	Ginneries	26	2,880	.....	.....	5	120	36	19
6	Repair shops	8	4,530	.....	.....	.....	.....	8	6
1	Electric shop and plant	2	3,000	.....	.....	.....	.....	2	2
1	Bottling works	3	1,500	.....	.....	.....	.....	3	2
1	Shingle mill	8	1,500	.....	.....	.....	.....	10	6
4	Millinery stores	4	1,950	.....	.....	.....	.....	4	4
	Total	545	\$ 186,840	.....	.....	5	\$ 120	707	485

MANUFACTURING REPORT—HAMILTON COUNTY.—(Continued).

12—Part 2-3—Agri.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
17	Turpentine stills						
10	Saw mills					\$ 20,750	33,900
12	Grist mills					6,780	9,240
3	Planing mills					13,500	28,500
5	Ginneries						
6	Repair shops					3,200	7,250
1	Electric shop and plant.....					2,000	3,500
1	Bottling works					1,500	2,500
1	Shingle mill					5,000	9,000
4	Millinery stores					2,380	4,550
	Total					\$ 55,110	\$ 98,340

MANUFACTURING REPORT—HAMILTON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
17	Turpentine stills	234,400	\$234,400	12,830	\$ 12,880	.....	.....	.....	.....
10	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
12	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Planing mills .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Ginneries .....	.....	.....	.....	.....	.....	.....	990	\$317,000
6	Repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Electric shop and plant..	.....	.....	.....	.....	.....	.....	.....	.....
1	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Shingle mill .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Millinery stores .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total	234,400	\$234,400	12,830	\$ 12,880	.....	.....	990	\$ 317,000

MANUFACTURING REPORT—JACKSON COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
14	Saw mills	\$ 560,000	284	\$ 128,500
1	Ice factory	10,000	9	2,000
8	Blacksmith shops	2,775	11	6,500
7	Cotton gins	17,000	31	2,900
1	Canning factory	15,000	20	5,000
2	Shoe shops	1,200	4	3,000
16	Grist mills	24,250	26	10,600
2	Bottling works	30,000	16	12,000
15	Garages	95,500	51	54,300
16	Turpentine	22,100	273	67,000
72	Total	\$ 777,795	725	\$ 231,500

MANUFACTURING REPORT—JACKSON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE,	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
14	Saw mills	275	\$ 128,500	.....	\$ .....	.....	\$ .....	784	565
1	Ice factory	9	2,000	.....	.....	.....	.....	9	5
8	Blacksmith shops	11	6,500	.....	.....	.....	.....	11	5
7	Cotton gins	31	2,900	.....	.....	.....	.....	31	31
1	Canning factory	20	5,000	.....	.....	.....	.....	20	15
2	Shoe shops	4	3,000	.....	.....	.....	.....	4	4
16	Grist mills	26	10,600	.....	.....	.....	.....	26	26
2	Bottling works	16	12,000	.....	.....	.....	.....	16	13
15	Garages	39	54,300	.....	.....	.....	.....	46	37
16	Turpentine stills	253	67,000	.....	.....	.....	.....	273	153
	Totals	684	\$ 303,800	.....	.....	.....	.....	1,220	854

MANUFACTURING REPORT—JACKSON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
14	Saw mills .....	.....	\$.....	.....	\$.....	\$ 126,500	\$ 157,300
1	Ice factory .....	.....	.....	.....	.....	10,000	15,000
8	Blacksmith shops .....	.....	.....	.....	.....	4900	14,700
7	Cotton gins .....	.....	.....	.....	.....	.....	.....
1	Canning factory .....	.....	.....	.....	.....	7,000	15,000
2	Shoe shops .....	.....	.....	.....	.....	3,500	1,850
16	Grist mills .....	.....	.....	.....	.....	11,700	28,300
2	Bathing works .....	.....	.....	.....	.....	45,000	75,000
15	—Garages .....	.....	.....	.....	.....	50,550	66,400
16	Turpentine stills .....	.....	.....	.....	.....	152,350	266,000
	Totals .....	.....	.....	.....	\$.....	\$ 411,500	\$ 639,850

MANUFACTURING REPORT—JACKSON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
14	Saw mills .....	.....	\$.....	.....	\$.....	.....	\$.....	.....	\$.....
1	Ice factory .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Cotton gins .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Canning factory .....	.....	.....	.....	.....	3,160	130,000	.....	.....
2	Shoe shops .....	.....	.....	.....	.....	.....	.....	.....	.....
16	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
15	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
16	Turpentine stills .....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals .....	.....	\$.....	.....	.....	3,160	\$130,000	.....	\$.....

MANUFACTURING REPORT—JEFFERSON COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Average Number
10	Blacksmith shops	2,850	13	\$ 10,400
1	Bottling works	4,000	4	1,200
1	Cooperage	1,000	2	1,000
1	Electric Power Co.....	25,000	6	3,000
20	Grits mills	13,300	21	3,060
6	Gins, cotton	21,000	25	6,500
1	Ice plant	5,000	4	1,500
31	Lumber mill, saw.....	276,000	339	208,500
2	Planing mills	18,000	48	17,000
1	Produce Co.	10,000	6	3,000
3	Shingle mills	7,000	24	9,000
330	Syrup mills	66,395	997	8,180
7	Turpentine stills	81,000	119	• 72,000
1	Tobacco, cigars	4,000	10	3,000
1	Wagon repairs	3,000	2	2,000
416	Totals.....	\$ 537,545	1,620	\$ 279,340

MANUFACTURING REPORT—JEFFERSON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
10	Blacksmith shops	13	\$ 10,400	.....	\$ .....	.....	\$ .....	24	10
1	Bottling works	4	1,200	.....	.....	.....	.....	6	3
3	Cooperage	2	1,200	.....	.....	.....	.....	4	1
1	Electric power Co.	6	3,000	.....	.....	.....	.....	10	4
20	Grits mills	21	3,060	.....	.....	.....	.....	21	21
6	Gins, cotton	25	6,500	.....	.....	6	1,200	34	19
1	Ice plant	4	1,500	.....	.....	.....	.....	5	2
31	Lumber mill, saw	339	208,500	.....	.....	.....	.....	347	177
2	Planing mills	48	17,000	.....	.....	.....	.....	62	29
1	Produce Co.	6	3,000	.....	.....	.....	.....	10	3
3	Shingle mills	24	9,000	.....	.....	.....	.....	48	14
330	Syrup mills	997	8,180	91	926	84	840	1,162	523
7	Turpentine stills	119	72,000	.....	.....	45	18,000	163	65
1	Tobacco, cigs	10	3,000	.....	.....	.....	.....	30	6
1	Wagon repairs	2	3,000	.....	.....	.....	.....	4	1
416	Total	1,620	\$ 279,340	\$ 91	926	135	\$20,040	1,930	877

MANUFACTURING REPORT—JEFFERSON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (including Custom Work and Repairing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
10	Blacksmith shops .....	.....	.....	.....	.....	\$ 11,800	\$ 21,300
1	Bottling works .....	.....	.....	.....	.....	30,000	38,000
1	Cooperage .....	.....	.....	.....	.....	2,000	1,000
1	Electric power Co. ....	.....	.....	.....	.....	15,000	20,000
20	Grits mills .....	.....	.....	.....	.....	19,200	26,200
6	Gins, cotton .....	.....	.....	.....	.....	.....	.....
1	Ice plant .....	.....	.....	.....	.....	15,000	18,000
31	Lumber mills, saw .....	.....	.....	.....	.....	443,000	590,000
2	Planing mills .....	.....	.....	.....	.....	38,800	60,400
1	Produce Co. ....	.....	.....	.....	.....	45,000	5,000
3	Shingle mills .....	.....	.....	.....	.....	40,000	68,000
330	Syrup mills .....	.....	.....	.....	.....	137,360	22,280
7	Turpentine stills .....	.....	.....	.....	.....	114,000	172,000
1	Tobacco, cigars	1,000,000	10,000	.....	.....	18,000	24,000
1	Wagon repairs .....	.....	.....	.....	.....	4,000	6,000
416	Totals	1,000,000	\$ 10,000	.....	.....	\$ 933,160	\$ 1,072,180

MANUFACTURING REPORT—JEFFERSON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
10	Blacksmith shops.....				\$		\$		\$
1	Bottling works								
1	Cooperage								
1	Electric power Co.....								
20	Grits millt								
6	Gins, cotton					1,080	\$162,000	15	\$ 450
1	Ice plant								
31	Lumber mills, saw.....								
2	Planing mills								
1	Produce Co.								
3	Shingle mills								
330	Syrup mills								
7	Turpentine stills	55,500	75,700	3,900	85,000				
1	Tobacco, cigars								
1	Wagon repairs								
416	Totals.....	55,500	\$ 75,700	3,900	\$ 85,000	1,080	\$162,000	15	\$ 450

MANUFACTURING REPORT—LAKE COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
	Naval stores	\$ 125,000	33	\$ 16,500
	Blacksmiths	1,275	.....	.....
	Gins	8,000	.....	.....
	Total.....	\$ 134,275	33	\$ 16,500

MANUFACTURING REPORT—LAKE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
	Naval stores	33	\$ 16,500	.....	.....	.....	.....	40	26
	Blacksmiths .....	.....	.....	.....	.....	.....	.....	.....	.....
	Gins .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total	33	\$ 16,500	.....	.....	.....	.....	40	26

MANUFACTURING REPORT—LAKE COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (including Custom Work and Repairing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
	Naval stores .....	.....	.....	.....	.....	.....	.....
	Blacksmiths .....	.....	.....	.....	.....	.....	.....
	Gins .....	.....	.....	.....	.....	.....	.....
	Total.....	.....	.....	.....	.....	.....	.....

MANUFACTURING REPORT—LAKE COUNTY.—(Continued),

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
	Naval stores	15,550	\$ 22,500	886	.....	.....	.....	.....	.....
	Blacksmiths .....	.....	.....	.....	.....	.....	.....	.....	.....
	Gins .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	15,550	\$ 22,500	886	.....	.....	.....	.....	.....

MANUFACTURING REPORT—LIBERTY COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
14	Naval stores	\$ 962,000	405	\$ 385,050
6	Garages	17,000	19	13,400
6	Saw mills	2,203,000	644	654,950
3	Grist mills	750	3	1,150
2	Blacksmith shops	2,000	5	4,100
1	Coca Cola plant	3,000	4	3,500
	Gin	500	2	1,100
	Total	\$ 3,188,250	1,082	\$ 1,063,250

MANUFACTURING REPORT—LIBERTY COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
14	Naval stores	405	\$ 385,050	.....	.....	.....	417	342	.....
6	Garages	19	13,400	.....	.....	.....	21	16	.....
6	Saw mills	644	654,950	.....	.....	.....	835	540	.....
3	Grist mills	3	1,150	.....	.....	.....	3	3	.....
2	Blacksmith shops	5	4,100	.....	.....	.....	5	5	.....
1	Coca Cola plant.....	3	3,500	.....	.....	.....	4	3	.....
1	Gin	2	1,100	.....	.....	.....	2	2	.....
	Total	1,082	\$ 1,063,250	.....	.....	.....	1,287	911	.....

MANUFACTURING REPORT—LIBERTY COUNTY.—(Continued).

13—Part 2.3—Agri.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
	Naval stores					\$ 26,080	\$ 34,860
	Garages					1,109,205	3,087,475
	Saw mills					170	1,825
	Grist mills					1,800	2,500
	Blacksmith shops					18,000	23,000
	Coco Cola plant.					900	1,200
	Gin						
	Total.					\$ 1,156,155	\$ 3,130,160

MANUFACTURING REPORT—LIBERTY COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
	Naval stores	247,250	\$346,300	11,000	\$208,930	.....	.....	.....	.....
	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
	Coco Cola plant.....	.....	.....	.....	.....	.....	.....	.....	.....
	Gin .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	247,250	\$346,300	11,000	\$208,930	.....	.....	.....	.....

MANUFACTURING REPORT—LEE COUNTY.

NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
Lumber companies	\$ 35,000	13	\$ 8,596
Blacksmith shops	43,085	6	9,640
Clam factory	25,000	25	13,650
Marine ways	54,500	28	50,400
Cigar Mfg. Cos.	25,500	35	59,623
Total	\$ 183,085	107	\$ 141,909

MANUFACTURING REPORT—LEE COUNTY.—(Continued).

NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
	Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
Lumber companies	13	\$ 8,596	.....	\$ .....	.....	\$ .....	15	11
Blacksmith shops	6	9,640	.....	.....	.....	.....	16	7
Clam factory	15	9,200	10	4,550	.....	.....	50	20
Marine ways	34	50,400	.....	.....	.....	.....	50	12
Cigar Mfg. Cos.	11	11,096	24	17,027	.....	.....	107	7
Total.....	79	\$ 88,932	34	\$ 21,577	.....	.....	238	57

MANUFACTURING REPORT—LEE COUNTY.—(Continued).

NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
	Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
	No. Cigars	\$ Value	No. Cigarettes	\$ Value		
Lumber companies	\$	\$		\$	12,000	
Blacksmith shops					3,039	
Clam factory					11,857	
Marine ways						
Cigar Mfg. Cos.	10,276,920	587,480				
Total	\$10,276,920	\$ 587,480		\$	26,896	

MANUFACTURING REPORT—LEON COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (In- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
6	Auto repair shops.....	1,760	10	6,740
15	Blacksmiths	2,875	17	4,500
3	Bakeries	8,000	13	18,500
1	Bicycle shop	600	1	900
3	Basket factories	31	3	18
1	Bottling works	8,000	8	3,000
1	Boiler shop	2,000	2	1,500
1	Cigar mfg.	20,000	5	6,000
9	Crossties	5,500	31	10,700
8	Cotton gins	27,100	27	3,023
325	Cane mills	20,830	1,089	3,449
1	Dry cleaning	1,000	4	2,880
25	Grist mills	10,160	25	2,072
5	Garages	51,500	25	21,531
1	Hat factory	1,000	2	1,440

1	Gun shop	20	1	120
1	Harness shop	150	2	950
1	Ice factory	4,160	22	19,009
2	Laundries	4,000	11	4,500
2	Lumber yards	140,000	200	135,000
12	Naval stores	253,800	235	125,120
1	Iron works	30,000	12	12,500
1	Paint shop	2,000	3	2,310
2	Photographers	1,500	4	2,200
2	Printing	58,000	32	38,000
3	Planing mills	23,500	20	21,800
1	Merchant tailor	10,000	6	18,000
4	Shoe repairing	2,150	9	2,700
15	Saw mills	116,700	214	188,300
2	Tobacco Packers	85,000	60	17,800
1	General repairing	50	1	150
2	Vulcanizing	2,500	8	4,400
1	Elec., gas and water	15,000	20	13,000
1	Marble works	3,000	2	1,200
7	Wood yards	2,655	21	4,925
1	Tin shop	700	1	500
1	Oil mill	65,000	35	8,400
1	Variety works	5,000	6	5,700
470	Total	\$ 985,241	2,187	\$ 712,837

MANUFACTURING REPORT—LEON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years.		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
6	Auto repair shops.....	10	\$ 6,740	.....	\$ .....	.....	\$ .....	12	10
15	Blacksmiths	17	4,500	.....	.....	.....	.....	25	2
3	Bakeries	10	13,728	3	4,772	.....	.....	20	16
1	Bicycle shop	1	900	.....	.....	.....	.....	1	1
3	Basket factories	3	18	.....	.....	.....	.....	3	0
1	Bottling works	8	3,000	.....	.....	.....	.....	10	6
1	Boiler shop	2	1,500	.....	.....	.....	.....	2	2
1	Cigar mfg.	2	3,000	3	3,000	.....	.....	8	3
9	Crossties	31	10,700	.....	.....	.....	.....	31	0
8	Cotton gins	27	3,023	.....	.....	.....	.....	27	18
325	Cane mills	362	1,673	122	378	628	1,452	1,089	0
1	Dry cleaning	4	2,880	.....	.....	.....	.....	4	2
25	Grist mills	25	2,072	.....	.....	.....	.....	25	25
5	Garage	24	20,631	1	900	.....	.....	29	12
1	Hat factory .....	.....	.....	2	1,440	.....	.....	3	1

1	Gun shop	1	120	.....	.....	.....	.....	1	1
1	Harness shop	2	950	.....	.....	.....	.....	2	2
1	Ice factory	22	19,009	.....	.....	.....	.....	30	15
2	Laundries	11	4,500	.....	.....	.....	.....	14	8
2	Lumber yards	200	135,000	.....	.....	.....	.....	220	180
12	Naval stores	235	125,120	.....	.....	.....	.....	313	144
1	Iron works	12	12,500	.....	.....	.....	.....	15	10
1	Paint shop	3	2,310	.....	.....	.....	.....	4	2
2	Photographers	2	1,400	2	800	.....	.....	4	2
2	Printing	32	38,000	.....	.....	.....	.....	42	25
3	Planing mills	20	21,800	.....	.....	.....	.....	29	16
1	Merchant tailor	6	18,000	.....	.....	.....	.....	9	3
4	Shoe repairing	9	2,700	.....	.....	.....	.....	12	6
15	Saw mills	214	188,300	.....	.....	.....	.....	278	149
2	Tobacco packers	18	8,000	42	9,800	.....	.....	65	25
1	General Repairing	1	150	.....	.....	.....	.....	1	1
2	Vulcanizing	8	4,400	.....	.....	.....	.....	12	6
1	Elec., gas and water...	18	11,320	2	1,680	.....	.....	25	15
1	Marble works	2	1,200	.....	.....	.....	.....	3	1
7	Wood yards	21	4,925	.....	.....	.....	.....	25	6
1	Tin shop	1	500	.....	.....	.....	.....	1	1
1	Oil mill	35	8,400	.....	.....	.....	.....	35	2
1	Variety works	6	5,700	.....	.....	.....	.....	8	4
470	Totals	1,405	\$ 688,669	177	\$ 22,770	628	\$ 1,452	2,437	722

MANUFACTURING REPORT—LEON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Auto repair shops.....					\$ 9,600	\$ 13,200
15	Blacksmiths					8,365	12,800
3	Bakeries					30,500	46,200
1	Bicycle shop					1,600	2,000
3	Basket factories					39	70
1	Bottling works					11,000	18,065
1	Boiler shop					4,000	6,000
1	Cigar factory	100,000	4,500				
9	Cross ties					18,175	24,320
8	Cotton gins						
325	Cane mills					26,678	88,184
1	Dry claning					4,000	5,200
25	Grist mills					5,890	17,620
5	Garages					7,301	95,817

1	Hat factory					2,440	4,286
1	Gun shop					140	325
1	Harness shop					1,100	1,520
1	Ice factory					75,182	81,257
2	Laundries					12,750	19,032
2	Lumber yards					299,000	358,000
12	Naval stores						
1	Iron works					42,500	51,300
1	Paint shop					4,310	6,250
2	Photographers					3,900	4,150
2	Printing					72,212	76,120
3	Planing mills					48,000	77,000
1	Merchant tailor					48,000	56,600
4	Shoe repairing					4,840	5,870
15	Saw mills					481,430	601,250
2	Tobacco packers					27,800	65,000
1	General repairing					200	350
2	Vulcanizing					6,500	8,575
1	Electric, gas and water works					74,000	78,000
1	Tombstone					5,500	6,200
7	Wood yards					8,045	12,430
1	Tin shop					700	1,000
1	Oil mill					7,340	10,000
1	Variety works					11,300	15,000
	Total	100,000	\$	4,500		\$ 1,430,067	\$ 1,868,991

MANUFACTURING REPORT—LEON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
6	Automobiles .....	.....	.....	.....	.....	.....	.....	.....	.....
15	Blacksmiths .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Bakeries .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Bicycle shop .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Basket factories .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Boiler works .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Cigar factory .....	.....	.....	.....	.....	.....	.....	.....	.....
9	Cross ties .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Cotton gins .....	.....	.....	.....	.....	2,372	\$259,920	.....	.....
325	Cane mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Dry cleaning .....	.....	.....	.....	.....	.....	.....	.....	.....
25	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....

1	Hat factory								
1	Gun factory								
1	Harness shop								
1	Ice factory								
2	Laundries								
2	Lumber yards								
12	Naval stores	124,735	\$156,562	9,592	\$ 40,278				
1	Iron works								
1	Paint shop								
2	Photographers								
2	Printing								
3	Planing mills								
1	Merchant tailor								
4	Shoe repairing								
15	Saw mills								
2	Tobacco packers								
1	General repairing								
2	Vulcanizing								
1	Electric, gas and water..								
1	Tombstone								
7	Wood yards								
1	Tin shop								
1	Oil mill								
1	Variety works								
	Total	124,735	\$156,562	9,592	\$ 40,278	2,372	\$259,920		

MANUFACTURING REPORT—LAFAYETTE COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements,	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
2	Naval stores	\$ 157,000	25	\$ 17,500
1	Lumber Company	97,463	40	68,546
1	Gin and grist mill.....	4,500	5	450
	Total.....	\$ 258,963	70	\$ 86,496

MANUFACTURING REPORT—LAFAYETTE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
2	Naval stores	25	.....	.....	.....	.....	.....	.....	.....
1	Lumber Company	40	.....	.....	.....	.....	.....	75	25
1	Gin and grist mill.....	.....	.....	.....	.....	.....	.....	5	5
	Total.....	65	.....	.....	.....	.....	.....	80	30

MANUFACTURING REPORT—LAFAYETTE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
2	Naval stores	10,500	\$ 10,000	625	\$ 13,750	.....	.....	.....	.....
1	Lumber Company .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Gin and grist mill .....	.....	.....	.....	.....	10	\$ 1,200	50	\$ 15,000
	Total	10,500	\$ 10,000	625	\$ 13,750	10	\$ 1,200	50	\$ 15,000

MANUFACTURING REPORT—MARION COUNTY.

14—Part 2-3—Agri.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
6	Crate and lumber.....	\$ 203,000	240	\$ 137,400
2	Cigars	600	2	1,740
5	Grist mills	2,800	8	1,625
5	Ice and storage.....	242,773	180	175,245
4	Lime factories	52,500	59	54,314
1	Peanut factory	3,500	12	1,872
7	repair shops	48,000	23	29556
1	Turpentine	235,000	205	154,640
	Total.....	\$ 786,173	729	\$ 556,392

MANUFACTURING REPORT—MARION COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
6	Crate and lumber	163	\$ 125,920	61	\$ 28,820	.....	.....	283	137
2	Cigars .....	.....	.....	.....	.....	.....	.....	2	2
5	Grist mills .....	.....	.....	.....	.....	.....	.....	11	7
5	Ice and storage.....	122	81,460	8	3,500	.....	.....	213	160
4	Lime factories .....	.....	.....	.....	.....	.....	.....	82	47
1	Peanut factory .....	.....	.....	10	1,000	.....	.....	12	6
1	Repair shop .....	.....	.....	.....	.....	.....	.....	34	18
1	Turpentine .....	.....	.....	.....	.....	.....	.....	225	169
	Total.....	285	\$ 207,380	79	\$ 33,320	.....	.....	862	546

MANUFACTURING REPORT—MARION COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Character of Product				Cost of Material and Value of Products	
		Tobacco Manufactories				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Crate and lumber.....	.....	.....	.....	.....	\$ 268,600	\$ 330,730
2	Cigars	52,000	\$ 3,300	.....	.....	.....	.....
5	Grist mills .....	.....	.....	.....	.....	.....	.....
5	Ice and storage .....	.....	.....	.....	.....	1,200	2,440
4	Lime factories .....	.....	.....	.....	.....	293,000	460,749
1	Peanut factory .....	.....	.....	.....	.....	198,833	215,481
1	Repair shop .....	.....	.....	.....	.....	1,500	2,500
1	Turpentine .....	.....	.....	.....	.....	54,820	58,260
	Total.....	52,000	\$ 3,300	.....	.....	\$ 817,953	\$ 1,070,210

MANUFACTURING REPORT—MARION COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
6	Crate and lumber.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Cigars .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Ice and storage .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Lime factories .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Peanut factory .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Repair shop .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Turpentine	114,900	\$169,435	8,150	\$ 91,000	.....	.....	.....	.....
	Total.....	114,900	\$169,435	8,150	\$ 91,000	.....	.....	.....	.....

MANUFACTURING REPORT—MANATEE COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
4	Blacksmith shops	\$ 9,700	8	\$ 3,800
202	Flowing wells	508,350	223	236,200
2	Grist mills	4,500	4	2,300
2	Garage shops	10,000	7	3,100
1	Ice factory	7,000	7	2,000
3	Milliner stores	6,000	4	1,100
5	Shoe repair shops	7,600	8	2,000
30	Sugar cane mills	46,700	94	2,730
3	Saw mills	93,000	54	11,300
7	Tailoring shops	16,700	12	4,000
4	Turpentine factories	6,425,756	175	949,080
	Total	\$ 7,135,306	596	1,216,610

MANUFACTURING REPORT—MANATEE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
4	Blacksmith shops	8	\$ 3,800	.....	.....	.....	.....	8	7
202	Flowing wells	223	236,200	.....	.....	.....	.....	223	197
2	Grist mills	4	2,300	.....	.....	.....	.....	4	4
2	Garage shopws	7	3,100	.....	.....	.....	.....	7	6
1	Ice factory	7	3,000	.....	.....	.....	.....	7	6
3	Millinery stores .....	.....	.....	3	\$ 1,100	.....	.....	4	4
5	Shoe repairing shops...	8	2,000	.....	.....	.....	.....	8	7
30	Sugar cane mills.....	96	2,705	.....	.....	.....	.....	94	73
3	Saw mills	54	4,300	.....	.....	.....	.....	54	53
7	Tailoring shops	9	4,000	.....	.....	.....	.....	12	11
4	Turpentine factories ...	185	949,080	.....	.....	.....	.....	195	195
	Total.....	370	\$ 1,215,485	3	\$ 1,100	.....	.....	608	563

MANUFACTURING REPORT—MANATEE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
4	Blacksmith shops .....	.....	.....	.....	.....	\$ 7,400	\$ 9,000
202	Flowing wells .....	.....	.....	.....	.....	540,700	589,300
2	Grist mills .....	.....	.....	.....	.....	4,000	4,700
2	Garage shops .....	.....	.....	.....	.....	6,500	7,300
1	Ice foctory .....	.....	.....	.....	.....	12,500	12,700
3	Millinery stores .....	.....	.....	.....	.....	2,000	2,500
5	Shoe repair shops.....	.....	.....	.....	.....	3,500	4,700
30	Sugar cane mills.....	.....	.....	.....	.....	48,600	54,400
3	Saw mills .....	.....	.....	.....	.....	92,000	98,000
7	Tailoring shops .....	.....	.....	.....	.....	7,000	9,100
4	Turpentine factories .....	.....	.....	.....	.....	.....	.....
	Total.....	.....	.....	.....	.....	\$ 724,200	\$ 791,700

MANUFACTURING REPORT—MANATEE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
4	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
202	Flowing wells .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Garage shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Ice factory .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Millinery stores .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Shoe repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
30	Sugar cane mills .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Tailoring shops .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Turpentine factories	536,500	\$627,975	.....	.....	.....	.....	6,240	\$ 13,200
	Total	536,500	\$627,975	.....	.....	.....	.....	6,240	\$ 13,200

MANUFACTURING REPORT—NASSAU COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Average Number
	Saw and planing mills.....	\$ 115,500	193	\$ 132,700
	Garage and repair shops.....	19,700	27	30,300
	Naval stores	338,000	250	192,750
	Blacksmiths	950	6	5,000
	Mfg. soft drinks.....	20,000	15	18,000
	Miscellaneous	300,000	210	69,000
	Totals.....	\$ 794,150	701	\$ 447,750

MANUFACTURING REPORT—NASSAU COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE,	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
	Saw and planing mills.	193	\$ 132,700	.....	\$ .....	.....	\$ .....	264	121
	Garage and repair shops	27	30,300	.....	.....	.....	.....	37	19
	Naval stores	250	192,750	.....	.....	.....	.....	405	181
	Blacksmith	6	5,000	.....	.....	.....	.....	8	5
	Mfg. soft drinks	15	18,000	.....	.....	.....	.....	6	3
	Miscellaneous	145	37,500	65	14,500	.....	.....	280	115
	Totals	636	416,250	65	\$ 14,500	.....	\$ .....	1,000	444

MANUFACTURING REPORT—NASSAU COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
	Saw and planing mills.....		\$		\$	\$ 136,500	\$ 406,500
	Garage and repair shops.....					24,300	67,200
	Naval stores						
	Blacksmith					3,600	11,500
	Mfg soft drinks.....					8,000	12,000
	Miscellaneous					130,000	188,000
	Totals					\$ 302,400	\$ 685,200

MANUFACTURING REPORT—NASSAU COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
	Saw and planing mills.....	.....	\$.....	.....	.....	.....	.....	.....	.....
	Garage and repair shops.....	.....	.....	.....	.....	.....	.....	.....	.....
	Naval stores	148,300	217,700	9,600	134,875	.....	.....	.....	.....
	Blacksmith .....	.....	.....	.....	.....	.....	.....	.....	.....
	Mfg. soft drinks.....	.....	.....	.....	.....	.....	.....	.....	.....
	Miscellaneous .....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals.....	148,300	\$217,700	\$ 9,600	\$134,875	.....	.....	.....	.....

MANUFACTURING REPORT—OKEECHOBEE COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
1	Naval stores	\$ 80,000	60	\$ 34,128
6	Syrup mills	11,797	40	3,604
1	Ice and power Co.....	25,000	10	12,000
1	Packing house plant.....	1,000	30	3,300
1	Saw mill	2,000	4	2,400
2	Grist mills	525	4	375
3	Garages	9,000	6	7,000
3	Fisheries	210,000	27	20,794
	Bottling works	1,200	2	575
1	Logging plant	17,025	50	41,600
20	Totals.....	\$ 357,547	233	\$ 125,776

MANUFACTURING REPORT—OKEECHOBEE COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
1	Naval stores	60	\$.....		\$.....				
6	Saw mills	36	4,232	8				40	26
1	Ice and power Co.....	8	12,000					15	6
1	Packing house plant...	25	3,300					30	15
1	Saw mill	3						4	3
2	Grist mills	4						4	2
3	Garages	6						9	3
3	Fisheries	19						27	18
1	Bottling works	2	575					2	1
1	Logging plant	50						75	25
20	Totals.....	213	\$ 20,107	8				206	99

MANUFACTURING REPORT—OKEECHOBEE COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned at this Gin this Year	Value
		Gallons	Value	Barrels	Value				
1	Naval stores	49,000	\$ 60,000	3,000	\$ 75,000	.....	\$ .....	.....	\$ .....
6	Syrup mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Ice and power Co.....	.....	.....	.....	.....	.....	.....	.....	.....
1	Packing house plant.....	.....	.....	.....	.....	.....	.....	.....	.....
1	Saw mill .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Fisheries .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
	Logging plant .....	.....	.....	.....	.....	.....	.....	.....	.....
20	Totals.....	49,000	\$ 60,000	3,000	\$ 75,000	.....	\$ .....	.....	\$ .....

MANUFACTURING REPORT—OKALOOSA COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
	Lumber.....	\$ 85,000	246	\$ 94,800
	Naval stroes	5,000	15	7,870
	Mills and ginneries	10,300	14	3,850
	Blacksmith shops	1,750	4	2,300
	Total.....	\$ 102,050	279	\$ 108,820

MANUFACTURING REPORT—OKALOOSA COUNTY.—(Continued).

16—Part 2.3—Agri.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
	Lumber	45	\$ 36,000	.....	.....	.....	960	307	219
	Naval stores	25	.....	.....	.....	.....	.....	25	4
	Mills and ginneries	2	3,850	.....	.....	.....	.....	14	14
	Blacksmith shops	1	1,700	.....	.....	.....	.....	5	4
	Total.....	73	\$ 41,550	.....	.....	.....	960	351	241

MANUFACTURING REPORT—OKALOOSA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
	Lumber .....	.....	.....	.....	.....	\$ 636,200	\$ 739,800
	Naval stores .....	.....	.....	.....	.....	.....	.....
	Mills and ginneries .....	.....	.....	.....	.....	4,685	6,925
	Blacksmith shops .....	.....	.....	.....	.....	3,580	4,150
	Total.....	.....	.....	.....	.....	\$ 644,465	\$ 750,875

MANUFACTURING REPORT—OKALOOSA COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
	Lumber								
	Naval stores	5,000	\$ 5,550	635	\$ 7,966				
	Mills and ginneries.....					350	\$ 35,000		
	Blacksmith shops								
	Total.....	5,000	\$ 5,550	635	\$ 7,966	350	\$ 35,000		

MANUFACTURING REPORT—OSCEOLA COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (In- cluding Lands, Build- ings, Improvements,	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
7	Saw mills	\$ 97,500	68	\$ 63,991
4	Blacksmith shops	5,400	5	5,500
3	Turpentine stills	12,000	22	20,000
	Planing mills	35,000	31	30,000
2	Concrete machines	3,200	2	2,000
9	Repair shops	12,750	9	9,200
11	Garages	38,000	27	32,450
7	Miscellaneous	100,150	10	97,100
	Total	\$ 1,204,000	174	260,241

MANUFACTURING REPORT—OSCEOLA COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
7	Saw mills	68	\$ 61,991	.....	.....	.....	.....	78	50
4	Blacksmith shops	5	550	.....	.....	.....	.....	5	3
3	Turpentine stills	22	20,000	.....	.....	.....	.....	25	20
3	Planing mills	31	30,000	.....	.....	.....	.....	36	30
2	Concrete machines	2	2,000	.....	.....	.....	.....	2	2
9	Repair shops	9	9,200	.....	.....	.....	.....	11	9
11	Garages	27	32,450	1	\$ 600	.....	.....	31	22
7	Miscellaneous	10	97,100	.....	.....	.....	.....	10	10
	Total	174	\$ 26,241	1	\$ 600	.....	.....	198	146

MANUFACTURING REPORT—OSCEOLA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
7	Saw mills .....	.....	.....	.....	.....	\$ 143,007	\$ 193,861
4	Blacksmith shops .....	.....	.....	.....	.....	7,000	10,500
3	Turpentine stills .....	.....	.....	.....	.....	.....	.....
3	Planing mills .....	.....	.....	.....	.....	10,300	62,000
2	Concrete machines .....	.....	.....	.....	.....	2,500	4,000
9	Repair shops .....	.....	.....	.....	.....	12,200	19,000
11	Garages .....	.....	.....	.....	.....	55,250	79,450
7	Miscellaneous .....	.....	.....	.....	.....	106,000	208,000
	Total .....	.....	.....	.....	.....	\$ 336,257	\$ 468,811

MANUFACTURING REPORT—OSCEOLA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl. and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
7	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Turpentine stills	16,700	\$ 27,000	.....	.....	.....	.....	.....	.....
3	Planing mills .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Concrete machines .....	.....	.....	.....	.....	.....	.....	.....	.....
9	Repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
11	Garages .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Miscellaneous .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	16,700	\$ 27,000	.....	.....	.....	.....	.....	.....

MANUFACTURING REPORT—ORANGE COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (In- cluding Lands, Build- ings, Improvements Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
2	Artificial stone and marble works.....	\$ 1,200	3	\$ 2,600
1	Blacksmith and wagons	13,250	4	14,700
1	Cigar factories	20,000	100	95,000
3	Foundry and machine works.....	77,673	34	36,500
11	Garage and repair	53,500	51	58,500
5	Ice, water and light.....	800,000	91	56,200
4	Job printing and publishers.....	40,500	19	16,600
1	Laundry	35,000	30	26,000
1	Picture framing	900	2	1,800
10	Packing fruit	128,000	295	135,500
5	Saw mills	139,966	112	76,000
4	Shoe repairing	8,875	6	7,700
1	Turpentine	5,000	13	10,000
	Total.....	\$ 1,323,864	760	\$ 537,100

MANUFACTURING REPORT—ORANGE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
2	Artificial stone and mar- ble works	3	\$ 2,600					3	2
1	Blacksmith and wagons	14	14,700					20	10
1	Cigar factories	10	15,000	90	\$ 80,000			100	100
3	Foundry - machine wks.	34	36,500					43	27
11	Garage and repair.....	51	58,500					70	34
5	Ice, water and light....	91	56,200					102	76
4	Job prtg. and publishers	19	16,600					27	16
1	Laundry	10	10,000	20	16,000			40	10
1	Picture framing	2	1,800					2	2
10	Packing fruit	249	115,500	46	20,000			400	185
5	Saw mills	112	76,000					142	81
4	Shoe repairing	6	7,700					9	4
1	Turpentine	13	10,000					16	10
	Total	614	\$ 421,100	156	\$ 116,000			974	523

.MANUFACTURING REPORT—ORANGE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
2	Artificial stone and marble wks	.....	.....	.....	.....	\$ 4,800	\$ 5,600
4	Blacksmith and wagons.....	.....	.....	.....	.....	24,000	29,200
1	Cigar factories	35,000,000	\$ 1,575,000	.....	.....	.....	.....
3	Foundry and machine works..	.....	.....	.....	.....	.....	.....
11	Garage and repair .....	.....	.....	.....	.....	62,091	68,291
5	Ice, water and light.....	.....	.....	.....	.....	75,200	94,000
4	Job printing and publishers..	.....	.....	.....	.....	123,000	189,200
1	Laundry .....	.....	.....	.....	.....	53,372	57,450
1	Picture framing .....	.....	.....	.....	.....	52,000	60,000
10	Packing fruit .....	.....	.....	.....	.....	2,000	3,900
5	Saw mills .....	.....	.....	.....	.....	652,000	668,000
4	Shoe repairing .....	.....	.....	.....	.....	187,996	200,909
1	Turpentine .....	.....	.....	.....	.....	13,000	14,400
	Total	35,000,000	\$ 1,575,000	.....	.....	\$ 1,247,459	\$ 1,390,950

MANUFACTURING REPORT—ORANGE COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned at this Gin this Year	Value
		Gallons	Value	Barrels	Value				
2	Artificial stone and marble works .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Blacksmith and wagons..	.....	.....	.....	.....	.....	.....	.....	.....
1	Cigar factories .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Foundry and machine wks	.....	.....	.....	.....	.....	.....	.....	.....
11	Garage and repair.....	.....	.....	.....	.....	.....	.....	.....	.....
5	Ice, water and light.....	.....	.....	.....	.....	.....	.....	.....	.....
4	Job prtg. and publishers.	.....	.....	.....	.....	.....	.....	.....	.....
1	Laundry .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Picture framing .....	.....	.....	.....	.....	.....	.....	.....	.....
10	Packing fruit .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Shoe repairing .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Turpentine	7,200	\$ 10,500	452	\$ 6,730	.....	.....	.....	.....
	Total.....	7,200	\$ 10,500	452	\$ 6,730	.....	.....	.....	.....

MANUFACTURING REPORT—POLK COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
16	Phosphate mines	\$ 19,085,050	.....	\$ .....
1	Planing mill	1,200	15	5
1	Bottling company	6,000	3	6
4	Repair shops	83,000	17	.....
3	Blacksmith shops	2,650	3	.....
25	Totals.....	\$ 19,177,900	38	\$ 11

MANUFACTURING REPORT—POLK COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
16	Phosphate mines		\$		\$		\$		
1	Planing mill	15	5					15	12
1	Bottling company	3	6			1	50	3	3
4	Repairing	17						18	16
3	Blacksmith shops	3						4	4
25	Totals	38	\$ 11			1	\$ 50	30	35

MANUFACTURING REPORT—POLK COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Character of Product				Cost of Material and Value of Products	
		Tobacco Manufactories				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (including Custom Work and Repairing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
16	Phosphate mines .....	.....	.....	.....	.....	.....	\$ 19,000,000
1	Planing mill .....	.....	.....	.....	.....	.....	.....
1	Bottling company .....	.....	.....	.....	.....	.....	.....
4	Repairing .....	.....	.....	.....	.....	.....	.....
3	Blacksmith shops .....	.....	.....	.....	.....	.....	.....
25	Totals .....	.....	.....	.....	.....	.....	\$ 19,000,000

MANUFACTURING REPORT—PASCO COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
6	Automobile	\$ 14,500	15	\$ 17,900
1	Bottling works	2,500	3	3,000
7	Blacksmiths	6,900	8	7,500
99	Cane mills	25,185	263	12,315
1	Cane foctory	2,000	4	800
2	Cement works	2,200	4	2,400
2	Cigar factories	5,500	45	22,000
1	Cotton gin	1,000	2	2,400
1	Creamery	1,500	1	1,500
1	Cross tie	12,500	106	74,600
4	Grist mills	2,820	6	2,850
3	Ice factories	\$ 7,500	14	14,000
6	Packing houses	15,500	71	11,350
1	Palmetto product	2,000	4	2,000

MANUFACTURING REPORT—PASCO COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
6	Repair shops	3,000	5	5,800
13	Saw mills	123,200	251	185,400
7	Turpentine stills	135,000	132	103,000
1	Tobacco factory	50,000	100	30,000
1	Wagen factory	1,000	1	1,200
2	Well drillers	2,250	4	3,000
	Total.....	\$ 425,055	1,039	\$ 503,015

MANUFACTURING REPORT—PASCO COUNTY.—(Continued).

16—Part 2-3—Agrl.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
7	Turpentine stills	1,232,000	\$1,232,000	12,600	\$ 47,200	.....	.....	.....	.....
1	Tobacco factory .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Wagon works .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Well drillers .....	.....	.....	.....	.....	.....	.....	.....	.....
	• Total	1,232,000	\$1,232,000	12,600	\$ 47,200	.....	.....	.....	.....

MANUFACTURING REPORT—PUTNAM COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Average Number
	Turpentine	\$ 5,761	5	\$ 2,500
	Turpentine	15,000	10	13,200
	Turpentine	20,000	20	800
	Saw mill	6,000	2	1,000
	Totals.....	\$ 46,761	37	\$ 17,500

MANUFACTURING REPORT—PUTNAM COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
	Turpentine	4	\$ 2,000	.....	\$ .....	1	\$ 500	7	2
	Turpentine .....	.....	.....	.....	.....	.....	.....	.....	.....
	Turpentine .....	.....	.....	.....	.....	.....	.....	.....	.....
	Saw mill .....	.....	.....	.....	.....	.....	.....	3	1
	Totals.....	4	\$ 2,000	.....	.....	1	500	10	3

MANUFACTURING REPORT—PUTNAM COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT*	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
	Turpentine		\$		\$	\$	
	Turpentine		\$		\$		
	Turpentine						
	Saw mill						
	Totals.....		\$		\$	\$	

MANUFACTURING PLANT—PUTNAM COUNTY. (*Continued*)

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
	Turpentine	1,496	\$ 2,055	91	\$ 1,820	.....	\$.....	.....	\$.....
	Turpentine	7,600	11,400	531	11,348	.....	.....	.....	.....
	Turpentine	6,950	5,540	507	6,604	.....	.....	.....	.....
	Sawmill	139,929	3,230	.....	.....	.....	.....	.....	.....
	Totals.....	155,975	\$22,225	1,129	\$ 19,772	.....	\$.....	.....	\$.....

MANUFACTURING REPORT—PALM BEACH COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
	Contract builders	\$ 191,628	636	\$ 493,000
	Hats and suits	7,600	41	36,300
	Shoe making and repairing.....	5,425	18	17,900
	Watch repairing	6,900	14	18,700
	Cleaners	9,100	31	18,700
	Boat building and repairing.....	53,500	44	50,000
	Soft drink Mfg.....	12,000	8	9,000
	Sea fishes—rare	5,000	2	2,000
	Rare taxidermist specimens.....	5,500	18	13,500
	Cement workers	5,500	18	13,500
	Plastering	200	5	5,000
	Iron working	2,000	10	8,000
	Plumbing	29,200	37	53,200
	Making maps	300	2	2,500
	Candy	500	2	1,200

Mattress and awning	2,100	7	5,000
Bicycle repairing	5,675	20	19,300
Blacksmithing	9,800	19	25,800
Road builders	53,116	152	237,800
Brick yards	127,000	30	30,000
Fish packers, wholesale.....	569,000	847	764,000
Bakeries	27,000	29	26,500
Garage repairing	85,700	90	95,550
Photo and finishing	8,100	10	14,700
Canal makers	390,000	322	298,000
Cabinet makers	3,000	5	5,500
Barrel factory	1,000	3	3,000
Candy factory	200	2	1,800
Tile factory	5,000	8	800
Ice cream factory.....	22,000	15	10,900
Mills, lumber, etc.....	1,885,000	94	196,840
Cement blocks	3,000	8	8,000
Cord wood	800	6	3,000
Contractors and builders.....	29,900	332	305,000
Fine art cement work.....	2,000	5	5,800
Electrical workers	465,905	68	71,000
Irrigation plants	12,900	6	5,000
Auto tires and repairs.....	500	2	2,000
Preserving factory	4,000	8	7,000
Electric repairing	53,500	16	19,500

MANUFACTURING REPORT—PALM BEACH COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
	Machine shops	7,000	10	13,000
	Plasterer, houses	24,350	230	305,200
	Architectural drafting	600	2	3,000
	Dress makers	6,000	25	21800
	Cigar factories	3,700	24	2,500
	Repairers, pianos	2,000	3	3,000
	Picture framers	200	2	1,200
	Totals.....	\$ 4,112,499	3,274	\$ 3,249,399

MANUFACTURING REPORT—PALM BEACH COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
	Contract builders.....	636	\$ 493,000	.....	\$.....	.....	\$.....	1,057	422
	Hats and suits.....	41	36,300	.....	.....	.....	.....	53	30
	Shoe making and repairs	18	17,900	.....	.....	.....	.....	21	15
	Watch repairing	14	18,700	.....	.....	.....	.....	17	11
	Cleaners	31	18,700	.....	.....	.....	.....	43	26
	Boat build. and repair.	44	50,000	.....	.....	.....	.....	61	35
	Soft drink Mfg.....	8	9,000	.....	.....	.....	.....	15	8
	Sea fishes—rare	2	2,000	.....	.....	.....	.....	5	2
	Rare taxidermy specim's	5	8,900	.....	.....	.....	.....	7	5
	Cement worker	18	13,500	.....	.....	.....	.....	22	16
	Plastering	5	5,000	.....	.....	.....	.....	6	3
	Iron working	10	8,000	.....	.....	.....	.....	10	6
	Plumbing	37	53,200	.....	.....	.....	.....	58	22
	Making maps	2	2,502	.....	.....	.....	.....	.....	.....

MANUFACTURING REPORT—PALM BEACH COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
	Candy	2	1,200	.....	.....	.....	.....	2	2
	Mattress and awning...	7	5,000	.....	.....	.....	.....	1	6
	Bicycle repairing	20	19,300	.....	.....	.....	.....	27	19
	Blacksmithing	19	25,800	.....	.....	.....	.....	17	10
	Road builders	152	237,800	.....	.....	.....	.....	243	138
	Brick yards	30	30,000	.....	.....	.....	.....	40	25
	Fish packers, wholesale	847	764,000	.....	.....	.....	.....	891	645
	Bakeries	29	26,500	.....	.....	.....	.....	43	31
	Garage repairing	90	95,550	.....	.....	.....	.....	134	77
	Photo finishing .....	.....	.....	.....	.....	.....	.....	14	12
	Candy makers	322	298,000	.....	.....	.....	.....	420	273
	Cabinet makers	5	5,500	.....	.....	.....	.....	8	5
	Barrel factory	3	3,000	.....	.....	.....	.....	3	3
	Candy factory	2	1,800	.....	.....	.....	.....	2	2

Tile factory	8	8,000	.....	.....	.....	10	8
Ice cream factory	15	10,900	.....	.....	.....	20	12
Mills, lumber, etc.	94	196,840	.....	.....	.....	148	79
Cement blocks .....	.....	.....	.....	.....	.....	12	9
Cord wood	6	3,000	.....	.....	.....	10	6
Contractors and builders	332	305,000	.....	.....	.....	435	263
Fine art cement work ..	5	5,800	.....	.....	.....	10	5
Electrical workers	68	71,000	.....	4,000	.....	95	52
Irrigation plants	6	5,000	.....	.....	.....	8	6
Auto tires and repairs ..	2	2,000	.....	.....	.....	4	2
Preserving factory	8	7,000	.....	.....	.....	8	6
Electric repairing	16	19,500	.....	.....	.....	30	18
Machine shops	10	13,000	.....	.....	.....	18	10
Plasterer, houses	230	305,200	.....	.....	.....	441	168
Architectural drafting ..	2	3,500	.....	.....	.....	3	2
Dress makers .....	.....	.....	.....	21,800	.....	29	23
Cigar factories	24	2,500	.....	.....	.....	34	22
Repairers, pianos	2	3,000	.....	.....	.....	4	3
Picture framers	2	1,200	.....	.....	.....	2	2
Totals	3,231	\$ 3,216,892	.....	\$ 25,800	.....	4,544	2,547

MANUFACTURING REPORT—SANTA ROSA COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
9	Saw mills	\$ 137,000	205	\$ 251,800
1	Saw mill and logging.....	2,090,000	1,138	590,199
7	Naval stores	134,250	380	155,200
6	Garages and repairs.....	75,050	23	26,948
5	Grist mills	10,300	6	2,306
16	Cane mills	3,535	42	2,765
1	Ice plant	7,000	6	7,500
4	Blacksmiths shop and repairs.....	1,325	5	4,300
1	Bottling works	6,500	3	3,500
1	Bakery	500	3	3,000
2	Jewelers and repairs	1,500	2	3,500
2	Millinery shops	2,500	2	1,500
1	Plumbing and repair shop.....	20	1	150
4	Shoe shop and repairs.....	2,000	5	3,650

1	Shingle mill	3,000	10	5,720
4	Ship yards and ways.....	43,000	58	429,000.
1	Water, light and sewerage.....	70,000	3	5,000
4	Miscellaneous industries	4,310	11	5,400
Total		\$ 2,591,990	1,903	\$ 1,501,438

MANUFACTURING REPORT—SANTA ROSA COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE,	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
9	Saw mills	205	\$ 251,800	.....	.....	.....	.....	252	141
1	Saw mill and logging...	1,077	562,699	37	\$ 17,000	24	10,500	1,697	1,151
7	Naval stores	380	155,200	.....	.....	.....	.....	438	303
6	Garages and repairs ...	22	25,492	1	1,456	.....	.....	28	19
5	Grist mills	6	2,306	.....	.....	.....	.....	11	6
16	Cane mills	42	2,765	.....	.....	.....	.....	53	33
1	Ice plant	6	7,500	.....	.....	.....	.....	12	1
4	Blacksmiths and repairs	5	4,300	.....	.....	.....	.....	5	5
1	Bottling works	2	3,300	.....	.....	1	200	4	2
1	Bakery	3	3,000	.....	.....	.....	.....	3	3
2	Jewelers and repairs...	1	3,500	.....	.....	.....	.....	2	2
2	Millinery shops .....	.....	.....	2	1,500	.....	.....	2	2
1	Plumbing, repair shop..	1	150	.....	.....	.....	.....	1	1
4	Shoe shops and repairs.	5	3,650	.....	.....	.....	.....	9	5

1	Shingle mill	10	5,720	.....	.....	.....	.....	15	7
4	Ship yards and ways...	58	429,000	.....	.....	.....	.....	84	35
1	Water, light, sewerage.	3	5,000	.....	.....	.....	.....	6	2
4	Miscellaneous industries	11	5,400	.....	.....	.....	.....	16	11
Total		1,838	\$ 1,470,782	40	\$ 19,956	25	10,700	2,638	1,729

MANUFACTURING REPORT—SANTA ROSA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
9	Saw mills					\$ 811,380	\$ 918,000
1	Saw mill and logging.....					895,000	918,000
7	Naval stores						
6	Garages and repairs					45,200	88,408
5	Grist mills					17,162	18,024
16	Cane mills					6,574	9,155
1	Ice plant					15,000	16,000
4	Blacksmith shops and repairs.....					5,550	6,450
1	Bottling works					7,000	10,300
1	Bakery					23,800	26,800
2	Jewelry and repairs.....					4,400	6,500
2	Millinery shops					3,600	6,000
1	Plumbing and repair shop.....					500	1,800
4	Shoe shops and repairs.....					5,800	7,400

1	Shingle mill .....	.....	.....	.....	.....	14,040	15,444
4	Ship yards and ways.....	.....	.....	.....	.....	130,000	157,000
1	Water, light and sewerage....	.....	.....	.....	.....	10,200	16,200
4	Miscellaneous industries .....	.....	.....	.....	.....	10,950	14,260
	Total.....	.....	.....	.....	.....	\$ 2,006,156	\$ 2,235,741

MANUFACTURING REPORT—SANTA ROSA COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned at this Gin this Year	Value
		Gallons	Value	Barrels	Value				
9	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Saw mill and logging....	.....	.....	.....	.....	.....	.....	.....	.....
7	Naval stores	231,824	\$271,311	15,875	\$306,670	.....	.....	.....	.....
6	Garages and repairs.....	.....	.....	.....	.....	.....	.....	.....	.....
5	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
16	Cane mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Ice plant .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Blacksmith shops, repairs .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Bakery .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Jewelers and repairs.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Millinery shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Plumbing and repairs....	.....	.....	.....	.....	.....	.....	.....	.....
4	Shoe repair shops.....	.....	.....	.....	.....	.....	.....	.....	.....

1	Shingle mill .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Ship yards and ways.....	.....	.....	.....	.....	.....	.....	.....	.....
1	Water, lightr sewerage...	.....	.....	.....	.....	.....	.....	.....	.....
4	Miscellaneous industries. ....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....		231,824	\$271,311	15,875	\$306,670	.....	.....	.....	.....

MANUFACTURING REPORT—SUWANNEE COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
1	Naval store	\$ 8,000	100	\$ 30,000
7	Ginneries	19,800	35	18,500
3	Saw and grist mills.....	5,300	21	6,200
2	Grist mills	1,000	2	200
8	Blacksmith shops	4,800	13	2,500
2	Saw mills	7,000	28	7,500
	Total.....	\$ 45,900	199	\$ 64,900

MANUFACTURING REPORT—SUWANNEE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
1	Naval store	100	\$ 30,000	.....	.....	.....	.....	125	10
7	Ginneries	35	8,700	.....	.....	.....	.....	66	9
3	Saw and grist mills....	13	3,600	.....	.....	.....	.....	24	4
2	Grist mills	1	200	.....	.....	.....	.....	3	2
8	Blacksmith shops	10	2,300	.....	.....	.....	.....	16	5
2	Saw mills	28	7,500	.....	.....	.....	.....	35	5
	Total.....	187	\$ 52,300	.....	.....	.....	.....	249	35

MANUFACTURING REPORT—SUWANNEE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
1	Naval store						
7	Ginneries					\$ 11,900	\$ 49,500
3	Saw and grist mills.....					1,700	13,000
2	Grist mills						
8	Blacksmith shops					2,600	900
2	Saw mills					3,700	26,000
	Total.....					\$ 19,900	\$ 89,400

MANUFACTURING REPORT—SUWANNEE COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
1	Naval store	50,000	\$ 70,000	200	\$ 1,000	.....	.....	.....	.....
7	Ginneries .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Saw and grist mills.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Saw mills .....	.....	.....	.....	.....	680	\$ 98,000	4,445	\$ 778,000
	Total.....	50,000	\$ 70,000	200	\$ 1,000	680	\$ 98,000	4,445	\$ 778,000

MANUFACTURING REPORT—ST. JOHNS COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
35	Tailoring and dressmaking.....	\$ 12,145	51	\$ 66,730
4	Furniture shops	7,000	9	13,584
3	Paper hangers	780	4	8,144
2	Harness shops	1,300	2	3,378
11	Turpentine stills	278,500	98	74,280
12	Shoe shops	8,225	13	23,625
14	Auto shops	70,000	42	72,785
6	Stone cutting	2,905	12	21,454
4	Jewelry and repairing	6,950	2	7,644
1	Sewing machine repairing.....	1,250	2	2,440
22	Carpenter and contracting.....	11,465	52	105,790
5	Electric repairing	62,600	37	28,080
5	Blacksmith Shop	6,650	11	21,540
3	Brick mason contractors.....	600	4	11,000

1	Novelty works	8,000	2	3,500
2	Ice factories	19,000	5	5,217
2	Mattress factories	275	2	3,620
6	Bicycle shops	20,700	8	12,423
17	Painter contractors	5,905	36	75,676
10	Plumbers and tinnern	13,450	23	39,810
4	Plaster and lathers	925	6	10,140
3	Printing companies	102,600	45	68,240
2	Bottling works	7,500	8	10,764
3	Bakeries	22,000	20	32,192
1	Gas company	200,000	14	25,200
3	Souvenir makers	280	3	3,600
1	Candy factory	5,000	3	5,500
6	Boat makers	10,680	19	32,716
2	Hat makers	4,800	3	5,744
6	Cigar factories	59,500	146	113,000
1	Barrel factory	50,000	20	15,000
3	Cooper shops	375	3	6,300
Total		\$ 1,001,360	705	\$ 929,716

MANUFACTURING REPORT—ST. JOHNS COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
35	Tailoring and drsmkng.	32	\$ 38,824	25	\$ 23,738	.....	.....	48	47
4	Furniture shops	7	12,894	.....	.....	.....	.....	9	9
3	Paper hangers	4	8,144	.....	.....	.....	.....	4	4
2	Harness shops	2	2,378	.....	.....	.....	.....	2	2
11	Turpentine stills	98	74,280	.....	.....	.....	.....	98	90
12	Shoe shops	13	23,625	.....	.....	.....	.....	13	13
14	Auto shops	41	72,005	.....	.....	.....	.....	42	40
6	Stone cutters	12	21,404	.....	.....	.....	.....	13	13
4	Jewelry repairing .....	.....	6,708	1	936	.....	.....	5	5
1	Sewing mach. reprng..	1	1,820	1	624	.....	.....	2	2
22	Carpenter contracting .	52	110,790	.....	.....	.....	.....	53	47
5	Electric repairing	36	42,464	.....	.....	.....	.....	42	36
5	Blacksmith Shop	11	21,540	.....	.....	.....	.....	45	40
3	Brickmason contractors	4	11,000	.....	.....	.....	.....	4	4

1	Novelty works	2	3,500	.....	.....	.....	.....	2	2
2	Ice factories	5	5,817	.....	.....	.....	.....	5	5
2	Mattress factories	2	3,620	.....	.....	.....	.....	2	2
6	Bicycle shops	8	12,423	.....	.....	.....	.....	8	8
17	Painter-contractors	35	75,676	.....	.....	.....	.....	36	36
10	Plumbers and tinner..	6	39,192	.....	.....	.....	.....	23	23
4	Plasters and lathers...	6	10,140	.....	.....	.....	.....	6	6
3	Printing companies	51	55,640	14	12,600	.....	.....	45	45
2	Bottling works	7	9,984	1	780	.....	.....	8	8
3	Bakeries	18	29,912	2	2,280	.....	.....	20	19
1	Gas company	14	25,200	.....	.....	.....	.....	14	14
3	Souvenir makers	3	3,600	.....	.....	.....	.....	3	3
1	Candy factory	2	4,000	1	1,500	.....	.....	3	3
6	Boat making	19	32,716	.....	.....	.....	.....	19	19
2	Hat makers .....	.....	.....	3	4,819	.....	.....	3	3
1	Cigar factory	113	95,550	35	16,450	.....	.....	148	143
1	Barrel factory	20	15,000	.....	.....	.....	.....	20	20
3	Cooper shops	3	6,300	.....	.....	.....	.....	3	3
Total.....		644	\$ 876,236	58	\$ 63,103	.....	.....	748	674

MANUFACTURING REPORT—ST. JOHNS COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
35	Tailoring and dressmaking...	.....	.....	.....	.....	\$ 25,678	\$ 130,991
4	Furniture shops .....	.....	.....	.....	.....	10,040	33,000
3	Paper hangers .....	.....	.....	.....	.....	1,050	12,500
2	Harness shops .....	.....	.....	.....	.....	1,142	5,800
11	Turpentine stills .....	.....	.....	.....	.....	5,800	.....
12	Shoe shops .....	.....	.....	.....	.....	10,601	50,920
14	Auto shops .....	.....	.....	.....	.....	21,200	89,272
6	Stone cutters .....	.....	.....	.....	.....	7,346	35,750
4	Jewelry repairing .....	.....	.....	.....	.....	5,880	26,800
1	Sewing machine repairing....	.....	.....	.....	.....	1,000	4,000
22	Carpenter contracting .....	.....	.....	.....	.....	11,219	129,212
5	Electric repairing .....	.....	.....	.....	.....	32,600	177,000
5	Blacksmith shops .....	.....	.....	.....	.....	3,750	30,000
3	Brickmason contractors .....	.....	.....	.....	.....	1,900	11,900

1	Navelty works					500	6,000
2	Ice factories					10,305	48,000
2	Mattress factories					3,100	10,200
6	Bicycle shops					8,680	37,500
17	Painter-contractors					7,450	93,089
10	Plumbers and tinner's					11,630	65,100
4	Plaster and lathers					2,050	14,240
3	Printing companies					30,000	197,000
2	Bottling works					3,000	19,500
3	Bakeries					10,530	43,304
1	Gas company					18,000	25,000
3	Souvenir makers					1,100	3,800
1	Candy factory					3,000	10,000
6	Boat making					6,750	53,500
2	Hat makers					3,000	17,000
6	Cigar factories	3,880,000	\$	194,000			
1	Barrel factory					10,000	38,580
3	Cooper shops					1,400	9,450
	Total	3,880,000	\$	194,000		\$ 269,701	\$ 1,428,408

MANUFACTURING REPORT—ST. JOHNS COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
35	Tailoring and dressmkg.	.....	.....	.....	.....	.....	.....	.....	.....
4	Furniture shops	.....	.....	.....	.....	.....	.....	.....	.....
3	Paper hangers	.....	.....	.....	.....	.....	.....	.....	.....
2	Harness shops	.....	.....	.....	.....	.....	.....	.....	.....
11	Turpentine stills	70,320	\$110,430	4,130	\$ 78,600	.....	.....	.....	.....
12	Shoe shops	.....	.....	.....	.....	.....	.....	.....	.....
14	Auto shops	.....	.....	.....	.....	.....	.....	.....	.....
6	Stone cutting	.....	.....	.....	.....	.....	.....	.....	.....
4	Jewelry repairing	.....	.....	.....	.....	.....	.....	.....	.....
1	Sewing machine repairing	.....	.....	.....	.....	.....	.....	.....	.....
22	Carpenter repairing	.....	.....	.....	.....	.....	.....	.....	.....
5	Electric repairing	.....	.....	.....	.....	.....	.....	.....	.....
5	Blacksmith shops	.....	.....	.....	.....	.....	.....	.....	.....
3	Brickmason contractors..	.....	.....	.....	.....	.....	.....	.....	.....

1	Novelty works .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Ice factories .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Mattress factories .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Bicycle shops .....	.....	.....	.....	.....	.....	.....	.....	.....
17	Painter contractors .....	.....	.....	.....	.....	.....	.....	.....	.....
10	Plumbers and tinnerns....	.....	.....	.....	.....	.....	.....	.....	.....
4	Plaster and lathers.....	.....	.....	.....	.....	.....	.....	.....	.....
3	Printing companies .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Bakeries .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Gas company .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Souvenir makers .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Candy factory .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Boat making .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Hat makers .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Cigar factories .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Barrel factory .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Cooper shops .....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....		70,320	\$110,430	4,130	\$ 78,600	.....	.....	.....	.....

MANUFACTURING REPORT—TAYLOR COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements,	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
6	Saw mills	\$ 1,120,000	655	\$ 51,0000
4	Turpentine stills	43,000	360	87,000
2	Bottling works	11,000	12	65,000
1	Ice plant	100,000	6	1,000
2	Planing mills	3,000	20	5,500
1	Grist mill	800	3	1,000
1	Blacksmith shop	1,100	2	500
	Total	\$ 1,278,900	1,058	\$ 211,000

MANUFACTURING REPORT—TAYLOR COUNTY.—(Continued).

18—Part 2-3—Agriculture.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
6	Saw mills	570	\$ 51,000	.....	.....	.....	.....	650	527
4	Stills	425	87,000	.....	.....	.....	.....	265	170
2	Bottling works	10	2,000	.....	.....	.....	.....	10	10
1	Ice plant	5	1,000	.....	.....	.....	.....	5	5
2	Planing mills	18	5,500	.....	.....	.....	.....	20	13
1	Blacksmith shop	2	500	.....	.....	.....	.....	2	1
1	Grist mill	2	1,000	.....	.....	.....	.....	4	3
	Total	1,032	\$ 148,000	.....	.....	.....	.....	956	729

MANUFACTURING REPORT—TAYLOR COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Character of Product				Cost of Material and Value of Products	
		Tobacco Manufactories				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (including Custom Work and Repairing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
6	Saw mills .....	.....	.....	.....	.....	.....	.....
4	Stillts .....	.....	.....	.....	.....	.....	.....
2	Bottling works .....	.....	.....	.....	.....	\$ 5,500	\$ 9,750
1	Ice plant .....	.....	.....	.....	.....	15,000	19,000
2	Planing mills .....	.....	.....	.....	.....	.....	.....
1	Grist mill .....	.....	.....	.....	.....	.....	.....
1	Blacksmith shop .....	.....	.....	.....	.....	.....	.....
	Total.....	.....	.....	.....	.....	\$ 20,500	\$ 28,750

MANUFACTURING REPORT—TAYLOR COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
6	Saw mills								
4	Stills	19,000	\$120,000	8,700	\$ 16,500				
2	Bottling works								
1	Ice plant								
2	Planing mills								
1	Grist mill								
1	Blacksmith shop								
	Total	19,000	\$120,000	8,700	\$ 16,500				

MANUFACTURING REPORT—VOLUSIA COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Average Number
18	Saw mills	\$ 462,000	367	\$ 508,000
11	Naval stores	442,000	330	240,500
6	Electric Power companies.....	1,135,000	127	120,700
6	Water powers	118,000	16	15,600
2	Mattress factories.....	2,100	2	1,400
39	Auto repairing	257,500	133	165,390
9	Printeries	95,800	81	73,950
17	Cross ties	15,800	396	97,850
8	Bicycle shops	9,050	8	2,800
18	Shoe shops	16,270	22	5,400
4	Bottling works	39,000	16	9,550
6	Watch repairing	4,750	10	9,800
14	Blacksmith shops	8,980	17	6,300
4	Preserving plants	17,600	29	8,600

5	Tailor shops	3,600	6	1,400
4	Millinery stores	7,500	10	4,600
5	Bakeries	36,500	39	41,250
15	Fruit packing houses.....	66,100	365	168,560
3	Salt mills	8,300	19	17,000
4	Kilns	28,000	46	28,500
8	Vulcanizing	8,250	11	5,200
6	Photo galleries	10,000	20	12,600
2	Cigar factories	2,700	9	5,500
3	Ice cream	11,550	9	3,000
3	Grist mills	1,060	3	1,500
7	Wood sawyers	4,040	18	8,100
4	Well drilling	3,100	4	1,750
11	Plumbing	32,300	45	61,300
6	Painters and paperhangers.....	7,900	23	29,550
Total.....		\$ 2,854,750	2,181	\$ 1,652,650

MANUFACTURING REPORT—VOLUSIA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
18	Saw mills	361	\$ 502,000	6	\$ 6,000	.....	.....	502	237
11	Naval stores	330	240,500	.....	.....	.....	.....	470	230
6	Electric Power Cos.....	121	115,300	7	5,700	.....	.....	133	106
6	Water Power Cos.....	16	15,600	.....	.....	.....	.....	21	13
2	Mattress factories .....	.....	.....	2	1,400	.....	.....	4	2
39	Auto repairing .....	.....	161,790	.....	3,600	.....	.....	197	97
9	Printeries	55	49,800	26	24,130	.....	.....	95	71
17	Cross ties	396	97,850	.....	.....	.....	.....	57	166
8	Bicycle shops	43	2,800	.....	.....	.....	.....	11	8
18	Shoe shops	22	5,400	.....	.....	.....	.....	30	21
4	Bottling works	16	9,550	.....	.....	.....	.....	26	9
6	Watch repairing	10	9,800	.....	.....	.....	.....	10	10
14	Blacksmith shops	17	6,300	.....	.....	.....	.....	20	15
4	Preserving plants	5	3,000	24	5,600	.....	.....	42	8

5	Tailor shops	6	1,400	.....	.....	.....	9	5
4	Millinery stores .....	.....	.....	10	4,600	.....	17	5
5	Bakeries	30	32,000	9	9,200	.....	64	33
15	Fruit packing houses..	285	138,900	80	29,660	.....	501	186
3	Salt mills	19	17,000	.....	.....	.....	28	10
4	Kilns	46	28,500	.....	.....	.....	63	26
8	Vulcanizing	11	5,200	.....	.....	.....	12	10
6	Photo galleries	12	9,700	8	2,900	.....	18	9
2	Cigar factories	7	4,000	2	1,500	.....	18	3
3	Ice cream	9	3,000	.....	.....	.....	11	5
3	Grist mills	3	1,500	.....	.....	.....	3	3
7	Wood sawyers	18	8,100	.....	.....	.....	31	11
4	Well drilling	4	1,750	.....	.....	.....	8	4
11	Plumbing	43	60,300	2	1,000	.....	67	23
6	Painters-paper hangers.	23	26,550	.....	.....	.....	44	14
Total.....		1,873	\$ 1,557,290	176	\$ 95,240	.....	2,949	1,377

MANUFACTURING REPORT—VOLUSIA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used Mine Supplies and Fuel)	(including Mill or Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
18	Saw mills					\$ 1,157,000	\$ 2,047,000
11	Naval stores						
6	Electric Power Cos.					162,600	363,966
6	Water Power Cos.					16,600	42,500
2	Mattress factories					2,400	5,500
39	Auto repairing					482,200	907,920
9	Printeries					48,350	171,810
17	Cross ties					63,900	240,500
8	Bicycle shops					12,150	38,000
18	Shoe shops					23,950	54,350
4	Bottling works					52,000	95,500
6	Watch repairing					1,925	26,700
14	Blacksmith shops					9,425	36,900
4	Preserving plants					31,500	73,000

5	Tailor shops					2,350	15,100
4	Millinery stores					16,700	31,500
5	Bakeries					120,900	221,100
15	Fruit packing houses					122,900	361,200
3	Salt mills					13,000	40,500
4	Kilns					22,000	40,000
8	Vulcanizing					5,025	25,900
6	Photo galleries					23,400	64,670
2	Cigar factories	170,000	\$	12,600			
3	Ice cream factories					13,250	27,700
3	Grist mills					350	1,375
7	Wood sawyers					12,750	25,500
4	Well drilling					3,400	12,200
11	Plumbing					71,300	180,000
6	Painter and paper hangers....					18,700	73,000
	Total.....	170,000	\$	12,600		\$ 2,510,025	\$ 5,223,691

MANUFACTURING REPORT—VOLUSIA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Is- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
18	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
11	Naval stores	142,900	\$168,700	8,435	\$129,280	.....	.....	.....	.....
6	Electric Power Cos. ....	.....	.....	.....	.....	.....	.....	.....	.....
6	Water Power Cos. ....	.....	.....	.....	.....	.....	.....	.....	.....
2	Mattress factories .....	.....	.....	.....	.....	.....	.....	.....	.....
39	Auto repairing .....	.....	.....	.....	.....	.....	.....	.....	.....
9	Printeries .....	.....	.....	.....	.....	.....	.....	.....	.....
17	Cross ties .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Bicycle shops .....	.....	.....	.....	.....	.....	.....	.....	.....
18	Shoe shops .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Bottling works .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Watch repairing .....	.....	.....	.....	.....	.....	.....	.....	.....
14	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Preserving plants .....	.....	.....	.....	.....	.....	.....	.....	.....

5	Tailor shops .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Millinery stores .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Bakeries .....	.....	.....	.....	.....	.....	.....	.....	.....
15	Fruit packing houses....	.....	.....	.....	.....	.....	.....	.....	.....
3	Salt mills .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Kilns .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Vulcanizing .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Photo galleries .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Cigar factories .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Ice cream factories.....	.....	.....	.....	.....	.....	.....	.....	.....
3	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Wood sawyers .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Well drilling .....	.....	.....	.....	.....	.....	.....	.....	.....
11	Plumbing shops .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Painters-paperhangers ...	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	142,900	\$168,700	8,435	\$129,280	.....	.....	.....	.....

MANUFACTURING REPORT—WALTON COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
7	Blacksmith shops	\$ 3,500.00	9	\$ 7,550.00
4	Cooper shops	600.00	5	4,100.00
2	Cotton gins	5,000.00	6	1,800.00
6	Corn mills	5,221.00	6	3,700.00
7	Saw mills	2,875,226.69	485	361,965.26
10	Naval stores	1,135,229.80	616	408,200.00
1	Shingle mill	1,030.00	5	7,500.00
	.....	400.00	1	750.00
37	Totals	\$4,016,207.46	1,133	\$ 795,545.26

MANUFACTURING REPORT—WALTON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time Dur- ing Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
7	Blacksmith shops	9	\$ 7,550.00	.....	\$ .....	.....	\$ .....	11	9
4	Cooper shops	12	4,100.00	.....	.....	.....	.....	5	4
2	Cotton gins	6	1,800.00	.....	.....	.....	.....	6	6
6	Corn mills	6	3,700.00	.....	.....	.....	.....	6	6
7	Saw mills	486	360,965.26	1	1,200	.....	.....	518	428
10	Naval stores	616	408,200.00	.....	.....	24	7,500	669	420
1	Shingle mill	5	7,500.00	.....	.....	.....	.....	5	5
		1	750.00	.....	.....	.....	.....	1	1
37	Totals.....	1,141	\$794,541.26	1	\$ 1,200	24	\$ 7,500	1,221	879

MANUFACTURING REPORT—WALTON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
7	Blacksmith shops .....	.....	.....	.....	.....	.....	.....
4	Cooper shops .....	.....	.....	.....	.....	.....	.....
2	Cotton gins .....	.....	.....	.....	.....	.....	.....
6	Corn mills .....	.....	.....	.....	.....	.....	.....
7	Saw mills .....	.....	.....	.....	.....	635,662	\$ 713,550
10	Naval stores .....	.....	.....	.....	.....	.....	.....
1	Shingle mill .....	.....	.....	.....	.....	.....	.....
37	Totals .....	.....	.....	.....	.....	\$ 639,662	\$ 713,550

MANUFACTURING REPORT—WALTON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Is- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
7	Blacksmith shops .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Cooper shops .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Cotton gins .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Corn mills .....	.....	.....	.....	.....	.....	.....	.....	.....
7	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
10	Naval stores	366,140	\$450,249	34,305	\$568,228	.....	.....	.....	.....
1	Shingle mill .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total	366,140	\$450,249	34,305	\$568,228	.....	.....	.....	.....

MANUFACTURING REPORT—WASHINGTON COUNTY.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (including Lands, Buildings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Employees
8	Naval stores	\$ 792,798	204	\$ 137,063
13	Saw mills	318,750	561	139,003
1	Planing mill	10,000	60	15,000
5	Repair shops	1,300	6	4,540
1	Machine shop	2,000	6	2,450
9	Grist mills	8,750	19	7,028
2	Saw and shingle mills.....	3,350	9	2,090
3	Ginneries	9,300	12	2,660
1	Cooperage	100	1	200
3	Millinery stores	3,350	6	2,200
3	Garage shops	2,400	6	3,600
1	Packing plant	100,000	40	5,500
	Total.....	\$ 1,252,998	930	\$ 321,334

MANUFACTURING REPORT—WASHINGTON COUNTY.—(Continued).

18—Part 2-3—Agriculture.

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
8	Naval stores	224	\$ 137,063	.....	.....	.....	.....	287	182
13	Saw mills	561	139,003	.....	.....	.....	.....	631	447
1	Planing mill	60	15,000	.....	.....	.....	.....	75	30
5	Repair shops	6	4,540	.....	.....	.....	.....	7	5
1	Machine shop	6	2,450	.....	.....	.....	.....	8	4
9	Grist mills	19	7,028	.....	.....	.....	.....	26	17
2	Saw and shingle mills..	2	2,090	.....	.....	.....	.....	13	6
3	Ginneries	10	2,410	2	\$ 250	.....	.....	13	9
1	Cooperage	1	200	.....	.....	.....	.....	1	1
3	Millinery stores .....	.....	.....	6	2,200	.....	.....	6	4
3	Garage shops	6	3,600	.....	.....	.....	.....	6	6
1	Packing plant	40	5,500	.....	.....	.....	.....	50	20
	Total.....	935	\$ 318,884	8	\$ 2,450	.....	.....	1,123	731

MANUFACTURING REPORT—WASHINGTON COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
8	Naval stores						
13	Saw mills					\$ 218,520	\$ 363,430
1	Planing mill					120,000	150,000
5	Repair shops					3,075	6,540
1	Machine shop					2,450	5,200
9	Grist mills					9,415	16,190
2	Saw and shingle mills.....					2,895	6,100
3	Ginneries						
1	Cooperage					350	700
3	Millinery stores					3,680	6,500
3	Garage shops					5,285	9,135
1	Packing plant					150,000	450,000
	Total.....					\$ 515,670	\$ 1,013,795

MANUFACTURING REPORT—WASHINGTON COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Island and Cotton Ginned at this Gin this Year	Value
		Gallons	Value	Barrels	Value				
8	Naval stores	168,700	\$148,520	6,934	\$131,409	.....	.....	.....	.....
13	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Planing mill .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Machine shop .....	.....	.....	.....	.....	.....	.....	.....	.....
9	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Saw and shingle mills...	.....	.....	.....	.....	.....	.....	.....	.....
3	Ginneries .....	.....	.....	.....	.....	795	\$ 47,400	.....	.....
1	Cooperage .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Millinery stores .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Garage shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Packing plant .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total	168,700	\$148,520	6,934	\$131,409	795	\$ 47,400	.....	.....

MANUFACTURING REPORT—WAKULLA COUNTY.

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Capital Invested (in- cluding Lands, Build- ings, Improvements, Machinery, Cash)	Average Number Wage Earners	Total Amount of Wages of All Em- ployees
8	Naval stores	\$ 384,000	386	\$ 236,430
9	Saw mills	51,950	117	51,300
5	Cooper shops	800	5	500
4	Grist mills	2,800	4	1,300
5	Garage shops	4,800	7	3,800
1	Gun shop	100	1	400
2	Repair shops	450	2	800
1	Shingle mill	500	5	1,500
	Total.....	\$ 445,400	527	\$ 296,030

MANUFACTURING REPORT—WAKULLA COUNTY.—(Continued).

Number of Establishments Reporting	NAME OF BUSINESS, MANUFACTURE,	Men 16 Years and Over		Women 16 Years and Over		Children Under 16 Years		Greatest No. Employed at Any One Time During Year in Industry	Least No. Employed at Any One Time During Year in This Industry
		Average Number	Total Amount of Wages Paid These Men	Average Number	Total Amount of Wages Paid These Women	Average Number	Total Amount of Wages Paid These Children		
8	Naval stores	293	\$ 195,430	.....	.....	93	21,000	471	244
9	Saw mills	117	43,200	.....	.....	.....	.....	141	85
5	Cooper shops	5	500	.....	.....	.....	.....	5	5
4	Grist mills	4	1,300	.....	.....	.....	.....	4	4
5	Garage shops	7	3,800	.....	.....	.....	.....	7	7
1	Gun shop	1	400	.....	.....	.....	.....	1	1
2	Repair shops	2	800	.....	.....	.....	.....	2	2
1	Shingle mill	5	1,500	.....	.....	.....	.....	5	2
	Total.....	434	\$ 246,930	.....	.....	93	21,000	636	350

MANUFACTURING REPORT—WAKULLA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Tobacco Manufactories				Cost of Material and Value of Products	
		Character of Product				Cost of Production and Material Used (including Mill or Mine Supplies and Fuel)	Value of Work (in- cluding Custom Work and Repair- ing)
		No. Cigars	\$ Value	No. Cigarettes	\$ Value		
8	Naval stores						
9	Saw mills					\$ 58,500	\$ 95,300
5	Cooper shops					855	1,850
4	Grist mills					1,700	2,675
5	Garage shops					5,300	13,000
1	Gun shop					500	1,000
2	Repair shops					1,350	3,500
1	Shingle mill					2,000	3,600
	Total					\$ 70,205	\$ 120,925

MANUFACTURING REPORT—WAKULLA COUNTY.—(Continued).

Number of Establish- ments Reporting	NAME OF BUSINESS, MANUFACTURE, OR PRODUCT	Naval Stores				Ginneries and Products			
		Turpentine		Rosin		No. Bales Upland Cotton Ginned at this Gin this Year	Value	No. Bales Sea Isl- and Cotton Ginned this Gin this Year	Value
		Gallons	Value	Barrels	Value				
8	Naval stores	137,650	\$184,000	12,380	\$185,500	.....	.....	.....	.....
9	Saw mills .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Cooper shops .....	.....	.....	.....	.....	.....	.....	.....	.....
4	Grist mills .....	.....	.....	.....	.....	.....	.....	.....	.....
5	Garage shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Gun shop .....	.....	.....	.....	.....	.....	.....	.....	.....
2	Repair shops .....	.....	.....	.....	.....	.....	.....	.....	.....
1	Shingle mill .....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	137,650	\$184,000	12,380	\$185,500	.....	.....	.....	.....

POPULATION OF CITIES OF 5,000 OR MORE 1915: 1915, 1910, 1900.

CITIES	COUNTIES	1920	1915	White	Negro	Total 1910
Gainesville	Alachua	5,286	* 6,736	3,609	3,126	6,183
Jacksonville ..	Duval	91,558	*66,850	30,798	36,035	57,699
Key West	Monroe	18,749	*18,495	13,624	4,860	19,945
Lakeland	Polk	7,062	* 7,287	4,760	2,527	3,719
Miami	Dade	29,549	*15,592	9,916	5,659	5,471
Ocala	Marion	4,914	* 5,370	2,717	2,652	4,370
Orlando	Orange	9,282	* 6,448	4,058	2,390	3,894
Pensacola	Escambia	31,035	*23,219	13,426	9,788	22,952
St. Augustine ..	St. Johns	6,192	* 5,471	3,835	1,638	5,494
St. Petersburg ..	Pinellas	14,237	* 7,186	4,897	2,289	4,127
Tallahassee ...	Leon	5,637	* 5,195	2,264	2,925	5,013
Tampa	Hillsborough ..	51,253	*48,160	36,210	11,914	37,782
West Tampa...	Hillsborough ..	8,463	* 7,837	6,867	967	8,258

POPULATION OF CITIES, 2,500 TO 5,000: 1915 AND 1910.

CITIES	COUNTIES	1920	1915	White	Negro	1910 Total
Apalachicola ..	Franklin	3,066	* 3,400	1,673	1,726	3,065
Arcadia	DeSoto	3,479	* 3,504	2,574	929	1,736
Bartow	Polk	4,203	* 3,412	1,994	1,418	2,662
Bradentown ..	Manatee	3,868	* 3,305	2,268	1,036	1,886
Daytona	Volusia	5,445	* 4,526	2,033	2,493	3,080
DeLand	Volusia	3,324	* 3,490	2,054	1,535	2,812
Fernandina ...	Nassau	5,457	* 3,114	1,158	1,953	3,482
Fort Myers ...	Lee	3,678	* 3,244	2,220	236	2,463
Kissimmee ...	Osceola	2,722	* 4,221	3,224	996	2,157
Lake City	Columbia	3,341	* 3,422	1,793	1,628	5,032
Live Oak	Suwannee	3,103	* 3,294	1,651	1,643	3,450
Palatka	Putnam	5,102	* 4,622	2,097	2,524	3,779
Plant City	Hillsborough ..	3,729	* 3,229	2,084	1,144	2,481
Quincy	Gadsden	2,540	* 3,451	1,125	2,326	3,204
Sanford	Seminole	5,588	* 4,998	2,494	2,502	3,570
W. Palm Beach	Palm Beach...	8,659	* 4,090	2,307	1,780	1,743

POPULATION OF CITIES AND TOWNS OF 1,000 TO 2,500 : 1915

CITIES AND TOWNS	COUNTIES	1915	White	Negro	Total 1910
Alton	Lafayette	1,050	593	457	922
Bonifay	Holmes	1,107	797	310	979
Brooksville	Hernando	1,385	875	510	1,009
Chipley	Washington	1,571	1,001	570	1,171
Clearwater	Pinellas	* 1,932	1,199	731	1,066
Dade City	Pasco	1,950	1,336	614	2,017
DeFuniak Sprgs	Walton	2,142	1,441	701	910
East Millville	Bay	1,502	1,122	400	1,165
Eustis	Lake	1,148	725	423	1,333
Fort Meads	Polk	* 2,150	1,542	608	1,319
Fort Pierce	St. Lucie	1,942	1,293	649	1,468
G. Cove Sprgs.	Clay	2,287	1,133	1,154	1,730
High Springs	Alachua	1,265	732	533	991
Jasper	Hamilton	1,631	930	701	853
Lauderdale	Broward	1,870	1,250	620	1,560
Leesburg	Lake	1,360	896	464	988
Lynn Haven	Bay	* 1,250	1,182	68	1,915
Madison	Madison	* 1,763	908	853	831
Manatee	Manatee	1,487	724	763	1,829
Marianna	Jackson	* 2,357	1,172	1,183	1,418
Milton	Santa Rosa	1,415	928	487	1,586
Monticello	Jefferson	2,040	805	1,235	816
Mulberry	Polk	* 1,121	717	403	1,121
New Augustine	St. Johns	* 716	1,032	684	1,418
Newberry	Alachua	1,000	360	640	1,586
New Smyrna	Volusia	* 2,012	1,312	699	816
Pablo Beach	Duval	* 1,000	695	300	1,121
Palmetto	Manatee	1,625	1,051	574	330
Panama City	Bay	2,013	1,461	552	773
Perry	Taylor	* 1,941	1,119	821	425
P. Tampa City	Hillsborough	* 1,071	590	480	1,012
Punta Gorda	DeSoto	1,772	1,339	433	1,343
St. Andrews	Bay	1,400	1,047	353	1,012
Sarasota	Manatee	1,682	1,172	509	675
S. Jacksonville	Duval	* 1,522	1,349	172	840
					1,147

*Complete census for 1920 not yet in our possession.

TABLE NO. 23—PART III—POPULATION OF CITIES AND TOWNS OF 2,000 AND UNDER: 1915 AND 1910.

CITIES AND TOWNS	COUNTIES	1915	White	Negro	Total 1910
Starke	Bradford	1,239	1,014	225	1,135
St. Cloud	Osceola	2,080	2,080	.....	.....
Tarpon Sprgs.	Pinellas	* 1,938	1,420	516	2,212
Titusville	Brevard	1,310	813	497	868
Wauchula	DeSoto	1,839	1,831	8	1,009
Winter Haven	Polk	1,226	1,119	107	.....
Zephyrhills	Pasco	1,450	1,406	44	423

PART IV—POPULATION OF CITIES AND TOWNS OF 1,000 AND UNDER: 1915 AND 1910.—Continued.

CITIES AND TOWNS	COUNTIES	1915	White	Negro	Total 1910
Alachua	Alachua	744	369	375	610
Alford	Jackson	215	165	50	.....
Altha	Calhoun	300	296	4	.....
Anthony	Marion	406	246	160	442
Apopka	Orange	598	295	303	410
Auburndale	Polk	511	427	84	.....
Avon Park	DeSoto	418	394	24	.....
Archer	Alachua	282	225	57	468
Bayview	Brevard	121	121	.....	.....
Baldwin	Duval	570	284	286	.....
Bell	Alachua	250	216	34	243
Bellevue	Marion	182	182	.....	190
Blountstown	Calhoun	927	698	229	546
Bowling Green	DeSoto	670	533	137	422
Bradley	Suwannee	295	194	101	.....
Brandford	St. Johns	411	217	194	.....
Bunnell	Sumter	228	.....	.....	.....
Bushnell	Nassau	343	272	71	.....
Callahan	Jackson	483	347	136	.....
Campbellton	Franklin	333	152	181	.....
Carrabelle	Sumter	950	655	295	900
Center Hill	Marion	495	396	99	299
Citra	Levy	400	215	185	394
Cedar Key	Brevard	800	556	244	864
Cocoa	Sumter	807	417	390	613
Coleman	Jackson	389	249	140	387
Cottondale	Putnam	392	240	152	.....
Crescent City	Citrus	800	466	333	677
Crystal River	Jackson	500	504	396	663
Cypress	Broward	512	338	174	.....
Dania	Volusia	582	524	55	331
Daytona Beach	Broward	370	133	237	.....
Deerfield	Polk	167	150	37	.....
Davenport	Volusia	304	167	137	216
DeLeon Sprgs.	Palm Beach	839	421	418	.....
Delray	Pinellas	429	358	71	256
Dunedin	Marion	979	431	548	1,227
Dunnellon	Orange	122	.....	122	108
Eatonville	Brevard	543	500	43	329
Eau Gallie	Manatee	497	290	207	.....
Ellenton	Holmes	276	222	54	340
Esto	Putnam	279	121	158	147
Federal Point	St. Lucie	898	689	209	.....
Fellsmere	Dade	368	307	61	.....
Florida City	Walton	104	104	.....	.....
Glendale	Jackson	731	580	151	734
Graceville	Gadsden	297	227	70	175
Greensboro	Gadsden	131	66	65	201
Gretna	Madison	622	288	334	751
Greenville	Pinellas	284	281	3	.....
Gulfport	Polk	378	246	132	.....
Haines City	Broward	407	211	196	.....
Hallendale	Bradford	349	221	128	265
Hampton	St. Johns	558	.....	.....	390
Hastings	Gadsden	486	334	152	432
Havana	Volusia	178	172	1	.....
Hawks Park	Alachua	496	264	232	324
Hawthorne	Volusia	378	365	13	207
Holly Hill	Nassau	429	242	187	.....
Hilliard	Dade	721	425	296	.....
Homestead					

PART IV—POPULATION OF CITIES AND TOWNS OF 1,000 AND
1,000 TO 2,500: 1915 AND 1910—Continued.

CITIES AND TOWNS	COUNTIES	1915	White	Negro	Total 1910
Interlachen . . .	Putnam	350	147	203	263
Jennings	Hamilton	682	370	312	480
Kathleen	Polk	361	321	40	.....
LaBelle	Lee	240	236	4	.....
Lake Butler . . .	Bradford	832	579	262	685
Lake Helen	Volusia	786	336	450	646
Lake Alfred	Polk	253	134	119	.....
Lakewood	Walton	324	149	175	360
Lake Worth	Palm Beach	612	612	.....	.....
Largo	Pinellas	552	504	48	291
Laurel Hill	Walton	300	288	12	315
Lawtey	Bradford	532	299	233	492
Lee	Madison	212	193	19	.....
Maccleenny	Baker	368	298	70	388
Maitland	Orange	145	126	19	157
Malone	Jackson	633	322	311	.....
Mayo	LaFayette	719	498	221	578
Mayport	Duval	500	315	185	441
McIntosh	Marion	206	162	44	.....
Melbourne	Brevard	408	404	4	157
Melrose	(Alachua) . . . . .	.....	.....	.....	.....
Micanopy	Putnam	191	146	45	245
Millville	Alachua	617	295	322	613
Mt. Dora	Bay	692	464	228	.....
Noma	Lake	576	403	173	371
Oakland	Holmes	832	634	198	806
Okeechobee	Orange	250	161	89	211
Orange City	St. Lucie	982	902	80	.....
Orange Park	Volusia	506	185	321	490
Ormond	Clay	341	136	203	372
Ozona	Volusia	857	411	446	780
Passa-as-Grille . .	Pinellas	152	141	11	.....
Palatka Heights . .	Pinellas	109	78	31	.....
Palm Beach	Putnam	734	415	319	367
Paxton	Palm Beach	113	101	12	.....
Pinellas Park . . .	Walton	329	247	112	.....
Ponce de Leon . . .	Pinellas	223	179	44	.....
Pomona	Holmes	295	240	55	.....
Pompano	Putnam	438	214	224	301
Port Orange	Broward	484	257	227	269
Raiford	Volusia	296	269	27	.....
Reddick	Bradford	500	330	170	.....
San Mateo	Marion	191	126	65	498
Seabreeze	Putnam	327	186	141	110
Sopchoppy	Volusia	443	435	8	308
Sneads	Wakulla	150	147	3	192
Stuart	Jackson	571	337	234	506
Sebring	Palm Beach	599	484	115	.....
Taft	DeSoto	398	356	42	.....
Tavares	Orange	216	88	128	.....
Trenton	Lake	449	370	79	175
Umatilla	Alachua	550	300	250	304
Waldo	Lake	527	527	.....	283
Webster	Alachua	550	300	250	304
Welborn	Sumter	307	250	57	301
White Springs . . .	Suwannee	341	262	79	247
Williston	Hamilton	900	631	269	1,177
Wildwood	Levy	800	457	343	371
Winter Garden . . .	Sumter	385	276	109	329
Winter Park	Orange	648	432	216	351
Welaka	Orange	787	400	387	570
Zolfo	Putnam	350	177	173	294
	DeSoto	350	284	66	171

*The variation in this total is caused by the addition of persons of another race.

†The enumerator gave only the total population, failing to define the corporate limits, so that the number of each race cannot be stated.

POPULATION OF FLORIDA—1920.

NUMBER OF INHABITANTS, BY COUNTIES AND MINOR CIVIL DIVISIONS.

(Prepared Under the Supervision of Wm. C. Hunt,
Chief Statistician for Population.)

TOTAL POPULATION, INCREASE, AND DISTRIBUTION.

Population of the State.—Florida was organized as a territory in 1822 and was admitted to the Union as the twenty-seventh State in March, 1845. According to the Fourteenth Census, taken as of January 1, 1920, its population is 968,470, which represents an increase of 215,851, or 28.7 per cent., over the population in 1910. During the same period the population of the United States increased by 14.9 per cent. The following summary shows the population of Florida from 1830 to 1920, inclusive, together with the increase for each decade, in comparison with the per cent. of increase for the United States as a whole:

POPULATION OF FLORIDA, 1830 TO 1920.

Census Year	Population.	Increase Over Preceding Census.		Per cent. of increase for the United States.
		Number.	Per Cent.	
1920	968,470	215,851	28.7	14.9
1910	752,619	224,077	42.4	21.0
1900	528,542	137,120	35.0	20.7
1890	391,422	121,929	45.2	25.5
1880	269,493	81,745	43.5	30.1
1870	187,748	47,324	33.7	22.6
1860	140,424	52,979	60.6	35.6
1850	87,445	32,968	60.5	35.9
1840	54,477	19,747	56.9	32.7
1830	34,730	.....	.....	.....

Counties.—Florida has 61 *counties, of which 29 show increases and 18 decreases as compared with 1910. (See Table 1.) The remaining 7 counties have been organized since 1910. Because of the resultant changes in county boundaries it has been necessary to show rates of increase and decrease in total and rural population of counties between 1910 and 1920, to make the following

*Seven new counties were created in 1921.

combinations: Bay and Washington; Broward, Okeechobee, Dade, Palm Beach, Osceola, and St. Lucie; Flagler, St. Johns, and Volusia; Okaloosa, Santa Rosa, and Walton; Pinellas and Hillsborough; Seminole and Orange.

Density of Population.—The total land area of the State is 54,861 square miles, and the average number of inhabitants to the square mile in 1920 is 17.7 (See Table 1), as against 13.7 in 1910 and 9.6 in 1900.

Minor Civil Divisions.—The political units into which the counties are divided are collectively termed "minor civil divisions." The primary divisions of the Florida Counties are the election precincts, which number 967, including 2 precincts—precinct 13, Cross Bayou, in Pinellas County, and precinct 6, Broadmoore, in St. Lucie County—for which no population was returned, and 2 military reservations. There are also 202 secondary divisions, comprising 48 cities, 152 towns and 2 villages. One city and 2 towns are each coextensive with the precincts in which located, and each of 23 cities and 5 towns comprises 2 or more precincts or parts of precincts. (See Table 2.)

Cities.—Florida has 48 cities, of which Jacksonville, with a population of 91,558, is the largest.

The following summary, etc., and table:

Urban and Rural Population.—The Census Bureau defines urban population as that residing in cities and other incorporated places having 2,500 inhabitants or more, and rural population as that residing outside such incorporated places.

The following summary presents, for the last three censuses, figures showing the urban and rural population of the State distributed among places grouped according to specified limits of population. The classification for each census is based upon the population of the various places as shown by the returns of that census. Consequently the territory comprised within any one class of cities or that designated as urban or as rural does not remain fixed, because any given place may, through the growth or the decline of its population, pass from one class to another at successive censuses. The proportion of the population of Florida living in places of 2,500 or more increased from 20.3 per cent. in 1900 to 29.1 per cent. in 1910 and to 36.7 per cent. in 1920.

POPULATION OF PRINCIPAL CITIES FROM EARLIEST CENSUS TO 1920.

(A minus sign (—) denotes decrease.)

City and Census Year.	Popu- lation.	Increase Over Preceding Census.		City and Census Year.	Popu- lation.	Census. Increase Over Preceding		City and Census Year.	Popu- lation.	Increase Over Preceding Census.	
		Number.	Per Cen			Number.	Per Cen			Number.	Per Cent.
<i>Jacksonville:</i>				<i>Key West—Con.</i>				<i>Pensacola—Cont.</i>			
1920	91,558	33,859	58.7	1860	2,832			1860	2,876	712	32.9
1910	57,699	29,270	103.0	1850	(†)			1850	2,164		
1900	28,429	11,228	65.2	1840	688			<i>St. Petersburg:</i>			
1890	17,201	9,551	124.8	<i>Miami:</i>				1920	14,237	10,110	245.0
1880	7,650	738	10.7	1920	29,571	24,100	440.5	1910	4,127	2,552	162.0
1870	6,912	4,794	226.3	1910	5,471	3,790	225.5	1900	1,575	1,302	476.9
1860	2,118	1,073	102.7	1900	1,681			1890	273		
1850	1,045			<i>Pensacola:</i>				<i>Tampa:</i>			
<i>Key Wests</i>				1920	31,035	8,053	35.0	1920	51,608	13,826	36.6
1920	18,749	—1,196	—6.0	1910	22,982	5,235	29.5	1910	37,782	21,943	138.5
1910	19,945	2,831	16.5	1900	17,747	5,997	51.0	1900	15,839	10,307	186.3
1900	17,114	—968	—5.3	1890	11,750	4,905	71.7	1890	5,532	4,812	668.3
1890	18,080	8,190	82.8	1880	6,845	3,498	104.5	1880	720	—76	—9.5
1880	9,890			1870	3,347	471	16.4	1870	796		
1870	(†)										

†Not returned separately. ‡Returns incomplete; slave population not reported.

URBAN AND RURAL POPULATION: 1920, 1910, AND 1900.

CLASS OF PLACES.	1920		1900		1910		Per Cent. of Total Population.		
	Number of places.	Population.	Number of places.	Population.	Number of places.	Population.	1920	1910	1900
Total population		968,470		752,619		528,542	100.0	100.0	100.0
Urban territory	30	355,825	23	219,080	12	107,031	36.7	29.1	20.3
Cities and towns of—									
50,000 inhabitants or more	2	143,166	1	57,699			14.8	7.7	
25,000 to 50,000 inhabitants	2	60,606	1	37,782	1	28,429	6.3	5.0	5.4
10,000 to 25,000 inhabitants	2	32,986	2	42,927	3	50,700	3.4	5.7	9.6
5,000 to 10,000 inhabitants	11	73,747	6	35,456			7.6	4.7	
2,500 to 5,000 inhabitants	13	45,320	13	45,216	8	27,902	4.7	6.0	5.3
Rural territory		612,645		533,539		421,511	63.3	70.9	79.7
Cities, towns, and villages of less than 2,500 inhabitants	*172	132,863	125	87,509	79	53,497	13.7	11.6	10.1
Other rural territory		479,782		446,030		368,014	49.5	59.3	69.6

*Includes four places not returned separately.

URBAN AND RURAL POPULATION OF COUNTIES: 1920, 1910, AND 1900.

COUNTY.	POPULATION.						Per Cent. Urban In Total Population.			Per Cent. of Increase In—				Rural popu- lation per square mile: 1920
	1900		1910		1920					Rural population.		Urban population.		
	Urban.	Rural.	Urban.	Rural.	Urban.	Rural.	1920.	1910	1900	1910 to 1900	1900 to 1910	1910 to 1920	1900 to 1910	
Florida	355,825	612,645	219,080	533,539	107,031	421,511	36.7	29.1	20.3	62.4	104.7	14.8	26.6	11.2
Alachua	6,860	24,829	6,183	28,122	3,633	28,612	21.6	18.0	11.3	10.9	70.2	*11.7	*1.7	19.8
Columbia	3,341	10,949	5,032	12,657	4,013	13,081	23.4	28.4	23.5	*33.6	25.4	*13.5	*3.2	13.8
Dade	29,571	13,182	5,471	6,462	.....	4,955	69.2	45.8	.....	440.5	.....	104.0	30.4	6.5
DeSoto	3,479	21,955	.....	14,200	.....	8,047	13.7	.....	.....	.....	.....	54.6	76.5	5.8
Duval	94,333	19,207	57,699	17,464	28,429	11,304	83.1	76.8	71.6	63.5	103.0	10.0	54.5	24.6
Escambia	31,035	18,351	22,982	15,047	17,747	10,566	62.8	60.4	62.7	35.0	29.5	22.0	42.4	27.9
Franklin	3,066	2,252	3,065	2,136	3,077	1,813	57.7	58.9	62.9	(†)	*0.4	5.4	17.8	4.2
Gadsden	3,118	20,421	3,204	18,994	.....	15,294	13.2	14.4	.....	*2.7	.....	7.5	24.2	37.8
Hillsborough	63,800	24,457	50,167	28,207	15,839	20,174	72.3	64.0	44.0	27.2	216.7	*13.3	39.8	23.6
Lee	3,678	5,862	.....	6,294	.....	3,071	38.6	.....	.....	.....	.....	*6.9	104.9	1.5
Leon	5,637	12,422	5,018	14,409	2,981	16,906	31.2	25.8	15.0	12.3	68.3	*13.8	*14.8	17.4
Manatee	3,868	14,844	.....	9,550	.....	4,663	20.7	.....	.....	.....	.....	55.4	104.8	11.1
Marion	4,914	19,054	4,370	22,571	3,380	21,023	20.5	16.2	13.9	12.4	29.3	*15.6	7.4	11.6
Monroe	18,749	801	19,945	1,618	17,114	892	55.9	92.5	95.0	*6.0	16.5	*50.5	81.4	0.7
Nassau	5,457	5,883	3,482	7,043	3,245	6,409	48.1	33.1	33.6	56.7	7.3	*16.5	9.9	9.3
Orange	9,282	10,608	7,464	11,643	.....	11,374	46.7	39.1	.....	24.4	.....	*8.9	2.4	11.4
Osceola	2,722	4,473	.....	5,507	.....	3,444	37.8	.....	.....	.....	.....	*18.8	59.9	3.3
Palm Beach	8,659	9,995	.....	5,577	.....	.....	46.4	.....	.....	.....	.....	79.2	.....	3.9
Pinellas	14,237	14,028	.....	.....	.....	.....	50.4	.....	.....	.....	.....	.....	.....	47.0
Polk	11,265	27,396	6,381	17,767	.....	12,472	29.1	26.4	.....	76.5	.....	54.2	42.5	14.4

Putnam	5,102	9,466	3,779	9,317	3,301	8,340	35.0	28.9	28.4	35.0	14.5	1.6	11.7	12.6
St. Johns	6,192	6,869	5,494	7,714	4,272	4,893	47.4	41.6	46.6	12.7	28.8	*11.0	57.7	11.8
Seminole	5,588	5,398	.....	.....	.....	.....	50.9	.....	.....	.....	.....	.....	.....	16.8
Suwannee	3,103	16,686	3,450	15,153	.....	14,554	15.7	18.5	.....	*10.1	.....	10.1	4.1	24.1
Volusia	8,769	14,605	5,894	10,616	.....	10,003	37.5	35.7	.....	48.8	.....	37.6	6.1	18.0
†All other counties....	.....	278,652	.....	245,471	.....	189,621	.....	.....	.....	.....	.....	13.5	29.5	11.9

† Less than one-tenth of 1 per cent.

‡ Comprises all counties in which there were no incorporated places having 2,500 inhabitants or more in 1920. These counties are Baker, Bay, Bradford, Brevard, Broward, Calhoun, Citrus, Clay, Flagler, Hamilton, Hernando, Holmes, Jackson, Jefferson, Lafayette, Lake, Levy, Liberty, Madison, Okaloosa, Okeechobee, Pasco, St. Lucie, Santa Rosa, Sumter, Taylor, Wakulla, Walton, and Washington.

* Denotes decrease.

POPULATION OF FLORIDA BY COUNTIES, 1830 TO 1920.

COUNTIES.	1920	1915	1910	1905	1900	1895	1890	1885	1880	1870	1860	1850	1840	1830
Totals for the State	921,618	752,619	614,902	528,542	464,639	391,422	338,406	269,493	187,748	140,424	87,445	54,477	34,730	
Alachua	30,115	35,366	34,305	34,007	32,245	28,207	22,934	25,947	16,462	17,328	8,232	2,524	2,282	2,204
Baker (1)	5,622	5,136	4,805	3,880	4,516	3,712	3,333	2,889	2,303	1,325				
Bay (16)	11,407	13,518												
Bradford (1)	12,503	10,778	14,090	12,943	10,295	9,499	7,516	6,926	6,112	3,671				
Brevard (2)	8,505	7,270	4,717	4,348	5,158	4,558	3,401	2,375	1,478	1,216	246			
Broward (21)	5,135	4,763												
Calhoun	8,775	7,468	7,465	5,796	5,132	3,274	1,681	2,294	1,580	998	1,446	1,377	1,142	
Citrus (3)	5,220	5,235	6,731	7,543	5,391	4,261	2,394							
Clay	5,621	7,315	6,116	5,484	5,635	5,200	5,154	4,260	2,838	2,098	1,914			
Columbia	14,290	16,024	17,689	19,913	17,094	12,935	12,877	11,299	9,589	7,335	4,646	4,808	2,102	
Dade (4)	42,731	24,536	11,933	12,089	4,955	3,322	861	333	257	85	83	159	446	
DeSoto (5)	25,434	22,194	14,200	12,446	8,047	6,418	4,944							
Duval	113,540	94,834	75,163	47,912	39,733	34,766	26,800	22,865	19,431	11,921	5,074	4,539	4,156	1,970
Escambia	49,386	41,117	38,029	32,383	28,313	22,503	20,188	17,000	12,156	7,817	5,768	4,351	3,993	2,518
Flagler	2,442													
Franklin	5,318	5,433	5,201	4,636	4,890	4,475	3,308	2,276	1,791	1,256	1,904	1,561	1,030	
Gadsden	22,901	22,989	22,198	16,511	15,294	13,693	11,894	11,209	12,169	9,802	9,396	8,784	5,992	4,895
Hamilton	9,873	12,484	11,825	9,921	11,881	9,991	8,507	7,201	6,790	5,749	4,154	2,511	1,464	553
Hernando (6)	4,548	6,291	4,997	4,040	3,638	2,940	2,476	7,178	4,248	2,938	1,200	926		
Hillsborough (17)	87,901	83,682	78,374	51,416	36,013	31,362	14,941	7,973	5,814	3,216	2,981	2,377	402	
Holmes	12,850	14,097	11,557	9,027	7,762	6,232	4,336	3,207	2,170	1,572	1,386	1,205		
Jackson	31,224	35,351	29,821	26,824	23,377	21,930	17,544	14,425	14,372	9,528	10,209	6,639	4,681	3,907
Jefferson	14,502	16,197	17,210	13,130	16,195	15,007	15,757	15,573	16,065	13,398	9,876	7,718	5,713	3,312
LaFayette	6,242	7,860	6,710	5,923	4,987	3,783	3,600	2,441	1,783	2,068				
Lake (8)	12,744	12,421	9,509	7,515	7,467	8,349	8,034							
Lee (9)	9,540	8,684	6,294	3,961	3,071	2,225	1,414							
Leon	18,059	20,135	19,427	18,883	19,887	19,567	17,752	17,444	19,662	15,236	12,343	11,442	10,713	6,494
Levy	9,921	11,902	10,361	9,280	8,603	7,534	6,586	6,649	5,767	2,018	1,781	465		
Liberty	5,906	4,920	4,700	2,835	2,956	2,079	1,452	1,327	1,362	1,050	1,457			
Madison	16,510	17,834	16,919	16,152	15,446	13,660	14,316	14,555	14,798	11,121	7,779	5,490	2,644	525
Manatee (5)	18,712	15,736	9,550	8,530	4,663	3,830	2,895	5,671	3,544	1,931	854			
Marion	23,968	28,758	26,941	26,725	24,403	21,875	20,796	17,424	13,046	10,804	8,609	3,338		
Monroe (9)	19,840	19,618	21,563	20,973	18,006	17,167	18,786	15,040	10,940	5,657	2,913	2,645	888	517
Nassau	11,340	10,005	10,525	11,012	9,654	8,843	8,294	8,610	6,635	4,247	3,644	2,164	2,892	1,511
New River (1)											3,820			

Okaloosa	3,360																
Okeechobee	2,132																
Orange (10)	19,890	15,397	19,107	13,591	11,374	12,459	12,584	14,400	6,618	2,195	987	466	73	733			
Osceola (11)	7,195	10,937	5,507	3,022	3,444	3,394	3,133										
Palm Beach (18)	18,654	9,669	5,577														
Pasco (12)	8,902	9,634	7,502	6,100	6,054	4,697	4,249										
Pinellas (19)	28,265	18,814															
Polk (13)	38,661	37,423	24,148	17,863	12,472	10,983	7,905	6,575	3,181	3,169							
Putnam	14,597	15,863	15,096	11,192	11,641	11,381	11,186	9,560	6,261	3,821	2,712	687					
Santa Rosa	13,670	20,745	14,897	11,801	10,293	8,914	7,961	7,490	6,645	3,312	5,480	2,883					868
Seminole (20)	10,986	9,453															
St. Johns	13,061	13,473	13,208	11,003	9,165	7,708	8,712	5,544	4,535	2,618	3,038	2,525	2,694	2,538			
St. Lucie (14)	7,886	8,589	4,057	3,024								139					
Sumter (15)	7,851	7,517	6,696	5,549	6,187	5,308	5,363	9,462	4,686	2,952	1,549						
Suwannee	19,789	20,286	18,603	18,011	14,554	12,544	10,524	8,829	7,161	3,556	2,303						
Taylor	11,219	10,785	7,103	5,581	3,999	3,062	2,122	2,160	2,279	1,453	1,384						
Volusia (4)	23,225	21,790	16,510	12,143	10,003	11,480	8,467	6,897	3,294	1,723	1,158						
Wakulla	5,129	7,606	4,802	5,207	5,149	3,700	3,117	2,890	2,723	2,506	2,839	1,955					
Walton	12,119	16,473	16,460	12,269	9,346	7,962	4,816	4,729	4,201	3,041	3,037	1,817	1,461	1,207			
Washington	17,828	11,123	16,403	11,908	10,154	7,820	6,426	4,320	4,089	2,302	2,154	1,950	859	978			

- 1—New River taken to form Baker and Bradford prior to 1870.
- 2—Organized from part of St. Lucie prior to 1860; part taken to form part of Osceola in 1887; divided to form St. Lucie in 1905.
- 3—Organized from part of Hernando in 1887.
- 4—Part of St. Lucie annexed prior to 1860. Subsequently part of Dade was taken in 1895 to create part of Broward County.
- 5—DeSoto organized from part of Manatee in 1887.
- 6—Name changed from Benton prior to 1860; parts taken to form Citrus and Pasco in 1887.
- 8—Organized from parts of Orange and Sumter in 1887.
- 9—Lee organized from part of Monroe in 1887.
- 10—Name changed from Mosquito prior to 1850; parts taken to form parts of Lake and Osceola in 1887. Subsequently, Orange was divided in 1913 to create Seminole County.
- 11—Organized from parts of Brevard and Orange in 1887.
- 12—Organized from part of Hernando in 1887; part annexed to Polk since 1890.
- 13—Part of St. Lucie annexed prior to 1860; part of Pasco annexed since 1890.
- 14—Part taken to form Brevard, and parts annexed to Dade, Polk and Volusia prior to 1860; recreated from part of Brevard in 1905.
- 15—Part taken to form part of Lake in 1887.
- 16—Bay County was created in 1913 from Washington and Calhoun Counties.
- 17—Hillsborough was divided in 1911 to create Pinellas County.
- 18—Palm Beach County was created part of Dade County in 1909.
- 19—Pinellas County was created from part of Hillsborough in 1911.
- 20—Seminole County was created from part of Orange County in 1913.
- 21—Broward County was created from parts of Dade and Palm Beach Counties in 1915.
- 22—Dixie County was created from Lafayette in 1921.
- 23—Union County was created from Bradford in 1921.
- 24—Sarasota County was created from Manatee in 1921.
- 25—Charlotte County was created from DeSoto in 1921.
- 26—Hardee County was created from DeSoto in 1921.
- 27—Glade County was created from DeSoto in 1921.
- 28—Highlands County was created from DeSoto in 1921.

COUNTIES COMPOSING CONGRESSIONAL DISTRICTS.

First District—Counties: Citrus, DeSoto, Hernando, Hillsborough, Lake, Lee, Manatee, Pasco, Pinellas, Polk, Sumter, Sarasota, Hardee, Charlotte, Glade and Highlands.

Second District—Counties: Alachua, Baker, Bradford, Columbia, Hamilton, Jefferson, LaFayette, Levy, Madison, Marion, Nassau, Suwannee, Taylor, Union and Dixie.

Third District—Counties: Bay, Calhoun, Escambia, Franklin, Gadsden, Holmes, Jackson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton and Washington.

Fourth District—Counties: Brevard, Broward, Clay, Dade, Duval, Flagler, Monroe, Orange, Osceola, Okeechobee, Palm Beach, Putnam, St. Johns, St. Lucie, Seminole and Volusia.

SENATORIAL DISTRICTS.

- First—Santa Rosa.
- Second—Escambia.
- Third—Walton and Holmes.
- Fourth—Jackson.
- Fifth—Liberty, Franklin and Wakulla.
- Sixth—Gadsden.
- Seventh—Polk.
- Eighth—Leon.
- Ninth—Hernando, Pasco and Citrus.
- Tenth—Madison.
- Eleventh—Hillsborough.
- Twelfth—Taylor and LaFayette.
- Thirteenth—Dade and Brevard.
- Fourteenth—Columbia.
- Fifteenth—Bradford.
- Sixteenth—Nassau.
- Seventeenth—Suwannee.
- Eighteenth—Duval.
- Nineteenth—Orange and Osceola.
- Twentieth—Marion and Sumter.
- Twenty-first—Levy.
- Twenty-second—Jefferson.
- Twenty-third—Lake.
- Twenty-fourth—Monroe and Lee.
- Twenty-fifth—Washington and Calhoun.

Twenty-sixth—Putnam.
 Twenty-seventh—Manatee and DeSoto.
 Twenty-eighth—Volusia.
 Twenty-ninth—Clay and Baker.
 Thirtieth—Hamilton.
 Thirty-first—St. Johns.
 Thirty-second—Alachua.

REPRESENTATION BY COUNTIES.

Alachua	2	Leon	2
Baker	1	Levy	1
Bradford	2	Liberty	1
Brevard	1	Madison	2
Calhoun	1	Manatee	1
Clay	1	Marion	2
Columbia	2	Monroe	2
Citrus	1	Nassau	2
Dade	1	Orange	2
DeSoto	1	Osceola	1
Duval	2	Polk	2
Escambia	2	Pasco	1
Franklin	1	Putnam	2
Gadsden	2	St. Lucie	2
Hamilton	2	Santa Rosa	2
Hernando	1	Sumter	1
Hillsborough	2	Suwannee	2
Holmes	1	Taylor	1
Jackson	2	Volusia	2
Jefferson	2	Wakulla	1
LaFayette	1	Walton	1
Lake	2	Washington	1
Lee	1		

PHOSPHATE PRODUCTION IN FLORIDA.

Amount of phosphate marketed from Florida and value during 1911-1919 (exclusive of 1914-1917):

	Shipped.	Value.
1911	2,436,248	\$ 9,473,638
1912	2,406,899	9,461,297
1913	2,545,276	9,563,084
1918	2,067,230	6,090,106
1919	1,660,200	7,797,929
	11,115,853	\$42,386,054
Average of.....	2,227,926	\$ 8,477,211

The following extracts from a bulletin issued by Hermina Gunter, State Geologist, give an adequate idea of the magnitude of this business:

"The phosphate industry of Florida in 1920 far exceeded that of any previous year, both in point of production and of value. This fact is brought out by statistics collected in co-operation with the United States Geological Survey and recently tabulated. The total shipment of phosphate from Florida during 1920 was 3,369,384 long tons, as compared with 1,660,200 long tons in 1919. This is an increase of 1,709,184 tons, which is more than twice the production for the previous year. The year 1913 is referred to as the "peak" year of the phosphate industry of the State, production that year amounting to 2,545,276 long tons, with a valuation of \$9,563,084. It is thus seen the output record for 1920 exceeds the former one by 824,108 tons and in value by \$9,901,278. The quantity of phosphate rock mined and marketed during 1920 from the whole United States was 4,103,982 tons. Of this amount, from the figures above given, it will be seen that Florida produced 82 per cent.

"The following table gives the production and value of the three varieties of phosphate rock produced in Florida for the years 1919 and 1920:

1919.

Variety	Quantity Long Tons	Value	Average Value Per Ton
Hard Rock	285,467	\$2,425,563	\$ 8.59
Soft Rock	14,498	196,318	13.54
Land Pebble	1,360,235	5,149,048	3.79
Total	1,660,200	\$7,797,929	\$ 4.70

1920

Variety	Quantity Long Tons	Value	Average Value Per Ton
Hard Rock	400,249	\$4,525,191	\$11.31
Soft Rock	13,953	109,551	13.66
Land Pebble	2,955,182	14,748,620	4.99
Total	3,369,384	19,464,362	\$ 5.78

"The recovery of the industry from the depressing conditions attributable to the recent world war is shown both in the largely increased production from the pebble phosphate fields and the very decided increase from the hard rock fields, as compared with the output for several preceding years. The amount of hard rock phosphate marketed during 1920 is evidence of the increased demand for this high grade rock. Soft phosphate maintained the record set in 1919, practically the same quantity being marketed in 1920 as in that year.

"The most striking increase in production for the year was from the pebble phosphate field, where the amount marketed total 1,594,947 tons more than in 1919. The average value per ton for the pebble rock increased from \$3.79 in 1919 to \$4.99 in 1920. The hard rock production increased 114,782 tons. The average value of this variety increased from \$8.59 per ton in 1919 to \$11.31 in 1920. For soft phosphate there was a slight decrease in the amount marketed, the average value per ton remaining practically the same in 1920 as in 1919.

"The total production of phosphate rock in Florida since the beginning of the industry in 1888 to the close of 1920, according to statistics collected by the Florida Geological Survey and the United States Geological Survey, is estimated to be 40,239,898 tons, with a total valuation of \$156,318,078."

**PHOSPHATIC FERTILIZERS.
NATURAL PHOSPHATES.
PRODUCTION OF NATURAL PHOSPHATES. ***

COUNTRIES.	1919	1918	1917	1916	1915	1914
	metric tons	metric tons	metric tons	metric tons	metric tons	metric tons
Belgium	(x)	(x)	(x)	(x)	(x)	140.000
Spain	(x)	15.000	28.000	14.111	9.080	8.312
France	(x)	(x)	(x)	25.000	(x)	130.000
Norway (2)	(x)	(x)	(x)	(x)	(x)	750
Russia	(x)	(x)	(x)	(x)	(x)	15.000
Canada (2)	24	142	151	206	220	969
United States	1.972.859	2.530.729	2.625.757	2.014.196	1.865.123	2.777.917
Dutch West Indies	(x)	(x)	4.000	14.468	31.308	21.720
Japan	(x)	(x)	121.628	114.810	57.723	38.264
Christmas Island	(x)	54.224	91.331	44.918	24.119	95.284
Algeria	276.040	189.419	305.039	389.211	225.871	355.140
Egypt	29.364	31.147	115.732	125.008	82.998	71.945
Tunis	815.385	818.962	999.326	1.695.295	1.384.374	1.388.229
Australia (South Australia)	(x)	6.000	5.182	6.000	6.000	6.000
Palau (Angaur)	(x)	30.000	30.000	30.000	30.000	60.000
French settlements in Oceania (Makatea)	(x)	(x)	32.259	39.285	71.724	72.925
Ocean and Nauri Island	(x)	100.000	100.000	100.000	100.000	150.000

* Authorities 1919 and 1918, 1917: Spain: *Boletín de Minas* and *Estadística minera de España*, Madrid; France: *Le Phosphate* Paris, Canada: *Annual Report of the Mineral Production of Canada*, 1918 United States *The American Fertilizer*, Philadelphia and U. S. Geological Survey, Washington; Dutch West Indies: *Commerce reports*: Washington and *Handelsberichten*, The Hague; Christmas Island: *Annual Colonial Reports*, Straits Settlements, Corresponding annual Report; Algeria: *Bulletin comparatif mensuel du mouvement commercial et maritime de l'Algérie*, Algiers; Egypt: *Ministère de l'Agriculture*, Cairo; Tunis: *Direction générale de l'Agriculture, du Commerce et de la Colonisation*, Tunis; French Oceania: *Bulletin de l'Office colonial*, Paris. For data of 1914, 1915, 1916 refer to the *International Year Book of Agricultural Statistics 1917-18* Rome.—(x) Data unavailable. — (2) Apatite.

PRODUCTION OF PHOSPHATES IN THE UNITED STATES.*

STATE-DESCRIPTIONS.	1919	1918	1917	1916	1915	1914
	metric tons	metric tons	metric tons	metric tons	metric tons	metric tons
<i>Florida:</i>						
Hard rock	345.456	63.048		47.843	50.934	314.659
Land pebble, River pebble	1,031.999	2,037.355	2,055.056	1,492.327	1,329.478	1,858.555
Totals	1,377.455	2,100.403	2,055.056	1,540.170	1,380.412	2,173.214
<i>South Carolina:</i>						
Land rock	111.765	37.634	34.022	53.898	84.799	108.635
River rock				0	0	0
Totals	111.765	37.634	34.022	53.898	84.799	108.635
<i>Tennessee and Arkansas:</i>						
Brown rock				369.951		
Blue rock					396.013	490.957
White rock	467.382	380.545	521.341	48.447	0	0
Totals	467.382	380.545	521.341	418.398	396.013	490.957
<i>Western States (Idaho, Utah, Wyoming)</i>	16.257	12.147	15.338	1.730	3.899	5.111
Grand Totals	1,972.859	2,530.729	2,625.757	2,014.196	1,865.123	2,777.917

*Authority: Department of the Interior, United States Geological Survey, Washington.

POTASSIC FERTILISERS.
PRODUCTION OF POTASSIC FERTILISERS. *
 (Calculated as Pure Potash).

COUNTRIES.	1919	1918	1917	1916	1915	1914
	metric tons	metric tons	metric tons	metric tons	metric tons	metric tons
Germany:						
Carnallite	—	3,712	3,645	3,617	3,788	4,674
Kainite, Hartsalz	—	390,588	339,782	277,658	248,858	329,631
Hartsalz, Sylvinite	—	—	—	—	42	2,721
20 % potash manure salts	—	180,964	174,058	61,141	15,865	33,697
30 % potash manure salts	—	5,283	20,565	16,417	6,596	14,463
40 % potash manure salts	—	95,240	250,246	419,967	288,070	261,100
Potash manure	—	20,106	18,339	35,406	25,904	22,706
Muriate of potash	—	292,506	149,116	57,469	67,987	183,680
Sulphate of potash	—	6,893	27,034	1,442	2,612	37,041
Sulphate of potash with magnesic	—	6,372	12,497	10,859	20,104	14,265
Totals	—	1,001,664	1,004,282	883,976	679,776	903,988
France:						
Alsaces						
Sylvinite 12-16 %	38,145	—	—	—	—	—
Rich sylvinite 20-22 %	33,632	—	—	—	—	—
Muriate of potash 40-60 %	20,229	—	—	—	—	—
Totals	92,006	—	—	—	—	—
United States:						
Origins						
Natural brines	20,237	36,030	18,735	3,623	—	—
Alunite	(1) 1,866	2,378	2,179	1,678	—	—

Dust from cement mills	1,121	1,405	1,471	0	—	—
Dust from blast furnaces	77	281	198	0	—	—
Kelp	—	4,358	3,240	1,412	—	—
Molasses resid. from distilleries	2,589	3,145	2,582	1,674	—	—
Wood ashes	529	611	563	374	—	—
Steffens water (sugar refineries)	2,989	1,246	335	0	—	—
Miscellaneous	—	262	227	57	—	—
Totals	29,408	(3) 49,716	29,550	8,818	—	—
British India (2)	(4) 17,497	(4) 23,856	21,857	26,675	20,611	17,500

* Authorities: Germany: *Kalisyndicate*, G. m. b. h., Berlin. — France: *Societe Commerciale des Potasses d'Alsace*. — United States: *The American Fertilizer*, Philadelphia, and *Department of the Interior, U. S. Geological Survey*, Washington. — British India: *Handbook of Commercial Information for India*, Calcutta, 1919.

(1) Including kelp. — (2) Data expressed as nitrate or potash. — (3) Capacity of works at end of 1918 estimated at 90,718 metric tons pure potash. — (4) Export.

THE REMAINING PUBLIC LANDS IN THE UNITED STATES.

While there are still over two hundred million acres of public lands in the United States unappropriated and unreserved, the number of desirable homesteads remaining is comparatively small. The hazards of taking a homestead have become so great as to call for extreme caution and a thorough knowledge on the part of the homesteader as to climate, rainfall, character of soil and the crops which may be produced, before undertaking to establish a home in this manner.

The settlement of vast portions of the United States under the government homestead act constituted the most notable peaceful occupation and development of land, on a large scale, in history. But the disposal of the remainder of these lands is an entirely different matter from the settlement of the agricultural areas in the humid sections. Generally speaking, the remaining public lands are suitable chiefly for grazing, being for the most part too rough or too arid for cultivation.

Prospective homesteaders should write to the General Land Office, Department of the Interior, Washington, D. C., and ask for the following free circulars:

Circular No. 541, "Suggestions to Homesteaders."

Circular No. 523, "The Stock-Raising Homestead Act."

Circular No. 641, "For Soldiers, Sailors and Marines, Explaining Credits on Account of Service."

Circular No. 474, "Regulations Covering Entries and Proofs under Desert Land Laws."

The following table gives the total area of public lands still unappropriated and unreserved by States. The figures include both surveyed and unsurveyed lands:

State—	Acres.
Alabama	37,200
Arizona	18,268,909
Arkansas	276,595
California	19,585,801
Colorado	8,941,185
Florida	120,077
Idaho	8,805,112
Kansas	4,346
Louisiana	14,240
Michigan	73,523

Minnesota	256,297
Mississippi	33,360
Missouri	18
Montana	5,973,741
Nebraska	66,844
Nevada	54,267,175
New Mexico	18,448,878
North Dakota	81,044
Oklahoma	7,404
Oregon	14,006,757
South Dakota	288,472
Utah	29,991,715
Washington	1,086,686
Wisconsin	5,154
Wyoming	19,679,595
Grand total.....	200,320,128

The lands in original 13 States, also in Texas, never formed a part of the public domain; their disposition is governed by the State laws, and information concerning same should be sought from the State authorities.

The total area of Alaska is 378,165,760 acres, of which about 25,384,000 acres are reserved. Approximately 1,264,449 acres have been surveyed under the rectangular system.

AUTOMOBILE REGISTRATIONS IN FLORIDA FOR YEAR 1920.

Series of Tags.	Total Number Issued.	Issued at Annual Rates.	Issued at Semi- Annual Rates	Amount Received.
A—Motorcycle	1,275	1,097	178	2,372.00
B—Automobile	40,733	36,596	4,137	193,330.00
C—Automobile	14,769	13,193	1,576	111,848.00
D—Automobile	6,280	5,673	607	71,718.00
E—Automobile	1,570	1,451	119	22,657.50
F—Automobile	114	99	15	10,650.00
M—Dealer	719	719	.....	10,785.00
W—Trucks	8,983	7,879	1,104	84,310.00
X—Trucks	1,187	978	209	27,062.50
Y—Trucks	254	207	47	1,525.00
Z—Trucks	24	21	3	2,250.00
Chauffeurs' Badges....	2,190	1,906	284	4,096.00
Totals	78,098	69,819	8,279	552,604.00
Received from transfer of licenses				\$ 1,544.00
Received from sale of duplicate tags				505.00
Received from sale of duplicate chauffeur's badges				5.00
Received from sale of duplicate chauffeur's badges				11.00
Received from sale of empty tag cartons				21.40
Received from reciprocal clause Texas registered car				1.00
Received from excess payment in stamps				3.74
Total				\$554,696.14

Class B—22 horse-power and under.
 Class C—Over 22 horse-power and not over 27 horse-power.
 Class D—Over 27 horse-power and not over 35 horse-power.
 Class E—Over 35 horse-power.
 Class F—Bus, 10 passengers and over.
 Class W—1 ton and under.
 Class X—Over 1 ton and not over 2.
 Class Y—Over 2 tons and not over 4.
 Class Z—Over 4 tons.

YOUR PART OF OUR NATIONAL DEBT.

The total pre-war debt of the world was..\$ 43,200,931,000

The total national debt of the world in

1920 was\$265,305,022,000

The national debt of the United States

in 1913 was\$ 1,028,564,000

The national debt of the United States in

1920 was\$ 24,974,936,000

Our per capital national debt in 1913 was.....\$ 11

Our per capita national debt in 1920 was.....\$225

The following is the per capita national debts of European and other governments for 1913 and 1920 respectively:

France	\$ 160
	1,150
Britain	78
	850
Germany (home debt)	18
	800
Austria (home debt)	63
	525
Hungary (home debt)	70
	387
Italy	78
	365
Australia	18
	318
Canada	70
	159
Russia	27
	\$?

Wars always inflate values, and undue inflation is followed by severe depression of prices and wages. During the world war and just following prices of all property and commodities soared to unprecedented points. Then came reaction and collapse. During 1919 and 1920 values of all kinds in the United States alone shrank the phenomenal aggregate of \$25,000,000,000. Such a decline in values is without a precedent in history. Governments had ceased to purchase for war purposes and private consumption had been reduced to the minimum and business became stagnant. The beginning of 1921 saw the depth of this deflation. Millions were out of em-

ployment and general depression was evident in every line of business. However, all this came about without depreciation of currency—such as we had often experienced at other periods of depression. Credits were restricted, but there was no calling in and destroying of currency as was the case in the panic of 1873. The Government's credit was not impaired essentially, though bonds were thrown on the market by those unable to hold for the low interest they paid and the bond market was crowded and the value of all kinds of bonds lowered.

The United States was not a debtor nation to any foreign country. On the other hand, it had loaned to European governments for war purposes the stupendous sum of \$10,000,000,000. Hundreds of millions have been contributed voluntarily by the American people to alleviate the distress of the people of war-wrecked Europe. At this writing (March, 1921) none of these debts have been paid and the interest has been deferred. Business shows signs of recuperating and proceeding on a normal base.

AFTER TWO WARS.

Your attention is invited to the following optimistic view of the situation.

Our money is at a premium over that of any other nation, and we face an opportunity in world trade which no other nation has.

"How many of us know when we are well off?" asks The Implement and Tractor Trade Journal (Kansas City). And to give its readers a little knowledge on this very point, it quotes a comparison between our situation today and that immediately following the Civil War. Any open mind, says the Kansas City editor, "can not fail to conclude that in the fundamentals the country and its people are in vastly better condition now and face surer prospects for sound prosperity in the future than was the case fifty-three years ago." Here are the comparisons, as this editor takes them from a house organ of the National Cash Register Company:

UNITED STATE AFTER CIVIL WAR—1861-1865.

1. Debtor nation.
2. United States borrowed heavily from Europe.
3. Paper currency at a discount—not on a gold basis—gold at a large premium.
4. European currency at a premium—dollar at a discount the world over.
5. United States credit was exhausted—looked to Europe for aid. Hundreds of thousands of the best men on both sides killed or impaired by disease.
6. Country was small in population and largely undeveloped.
7. Industries in their infancy.
8. In adequate banking system.
9. Foreign trade small—imports exceeded exports.
10. War left large part of country devastated and balance impoverished.
11. Commercial and industrial development dependent on European capital.
12. Decline of merchant marine.
13. High prices and high wages prevailed in this country only.
14. Large immigration set in.
15. Public debt small as compared with today.
16. Government expenses quickly reduced and inflation stopped.
17. Period of great railroad building started.
18. Period of labor-saving inventions set in.
19. Lack of transportation.
20. Took ten years for rates on commercial paper to decline from 8 per cent. to 5 per cent.
21. Took fifteen years for prices to decline 50 per cent.
22. No quantity production. Manufacturers used hand methods.
23. Booze. Cost the people millions of dollars each year.
24. No suffrage for women.

UNITED STATES AFTER WORLD WAR—1914-1918.

1. Creditor nation.
2. Europe owes the United States 10 billions on government loans and 3 to 4 billions more on private loans.
3. United States has one-third of the world's gold.

4. European currency at a discount. Dollar at a premium the world over.

5. Europe's credit is exhausted. All are looking to the United States for aid. Millions of the best men on both sides killed or impaired by disease.

6. Country is powerful and natural resources developed.

7. Industries developed and on a firm basis.

8. Good banking system.

9. Foreign trade large. Exports exceed imports by 3 billions in 1919.

10. War was world-wide. No part of United States destroyed.

11. Commercial and industrial development of Europe and United States dependent on United States capital.

12. Large merchant marine developed.

13. High prices and wages prevail all over the world.

14. Prospects of large immigration.

15. Public debt 25 billions.

16. Government expenses must be reduced. Deflation under way.

17. Reconstruction needs of the railroads are enormous.

18. More labor-saving devices are necessary.

19. Huge transportation systems. Good management needed.

20. Interest rate on commercial paper is 8 per cent.

21. Wholesale prices are on the downward trend.

22. Modern methods in manufacturing—quantity production.

23. Prohibition. Saves millions of dollars.

24. Woman suffrage. Better government.

"Although the United States has only six per cent. of the world's population, it produces:

90 per cent. of the world's supply of motion pictures.

85 per cent. of the world's supply of automobiles.

75 per cent. of the world's supply of corn.

66 per cent. of the world's supply of oil.

60 per cent. of the world's supply of copper.

60 per cent. of the world's supply of aluminum.

60 per cent. of the world's supply of cotton.

52 per cent. of the world's supply of coal.

50 per cent. of the world's supply of zinc.

40 per cent. of the world's supply of lead.

- 40 per cent. of the world's supply of silver.
- 50 per cent. of the world's supply of iron and steel.
- 25 per cent. of the world's supply of wheat.
- 20 per cent. of the world's supply of gold.

"Besides the above figures, foreign nations owe the United States over \$10,000,000,000. Not only are we rich in material wealth, but also in art, science, literature, inventiveness, ingenuity and brains. Prosperity is ahead. Let's go to it."—Exchange Trade Review.

PERCENTAGE OF PEOPLE WHO FARM.

"The following table shows the percentage of the total number of persons employed in all American occupations who were engaged in agriculture from 1820 to 1910:

1820	87.1
1840	77.5
1870	47.5
1880	44.4
1890	39.2
1900	35.7
1910	32.9

"We may expect for 1920 a lower percentage than for 1910. It will not be surprising if the complete returns show that only 30 per cent. of our workers are farmers. It is true, of course, that increased efficiency in farming operations resulting from the use of new and better machinery and the application of scientific knowledge has consistently lowered the demand for labor in certain kinds of farm work and that the labor thus released has been the first to yield to the call of the city. It is a well-known fact also that army life and its accompanying set of new associations detached from farming and from rural life a considerable number of farm youth.

PRODUCTION AND WEALTH OF NATION SHOULD INSURE FOOD AND SHELTER TO ALL.

(From *Labor*)

During the past twenty years, from 1900 to 1920, the per capita wealth of the United States has increased from \$1,165 to \$4,700. Data compiled from the recent census by *Commerce and Finance* presents some interesting information concerning this nation's progress during this period. The bank deposits in the United States exceed by

billions the combined bank deposits of the whole world outside of this country. Before the war we owed other nations \$5,000,000,000. We have not only paid this debt, but foreign nations now owe us \$10,000,000,000, and we hold the largest gold reserves of any nation in the world.

While the United States has only six per cent. of the world's population and only seven per cent. of the globe's land area, we now contribute one-quarter of the world's agricultural supplies, one-third of the mineral products, and one-third of all manufactured goods.

With so much wealth and productivity there should not be a single hungry, shelterless, or ill-clothed individual in this entire country during the winter. There should be no bred lines of the unemployed. The following table gives the best evidence of this:

TWENTY YEARS OF NATIONAL PROGRESS.

<i>Social.</i>			
	1900.	1910.	1920.
Continental area	3,026,789	3,026,789	3,026,789
Population	76,303,387	91,972,266	106,650,000
Wealth	\$88,517,306,775	\$125,000,000,000	\$500,000,000,000
Wealth, per capita	1,165	1,360	4,700
<i>Financial.</i>			
Gold in circulation ..	\$610,806,472	\$592,547,340	\$1,225,210,813
Silver in circulation..	142,050,335	217,229,937	385,083,071
Circulation of money..	2,055,150,998	3,119,753,246	6,084,854,578
Nat. banks, number...	5,732	7,145	7,933
Nat. banks, capital...	621,536,461	989,567,104	1,182,082,000
Deposits in Nat'l banks	2,458,092,758	5,287,216,312	17,155,421,000
Deposits in savings banks	2,389,719,954	4,070,486,247	6,000,000,000
Depositors in savings banks	6,107,083	9,142,798	11,500,000
Bank clearances, U. S.	\$84,582,450,081	\$169,025,600,000	\$417,519,523,388
<i>Commerce and Industry.</i>			
Imports, merchandise.	\$849,941,184	\$1,556,947,430	\$5,238,621,668
Imports, merchandise, per capita	10.88	17.21	49.12
Exports, merchandise.	1,394,483,082	1,774,984,720	8,111,039,733
Exports, merchandise, per capita	17.96	19.02	76.05
World's gold production	262,220,915	454,874,000	380,924,700
World's silver production	224,441,200	286,662,700	255,217,648
U. S. bituminous coal output, tons	172,609,988	420,000,000	458,063,000
U. S. anthracite shipments, tons	45,276,622	64,000,000	65,500,000
U. S. petroleum production, gallons	2,672,062,218	7,469,639,508	14,792,000,000
U. S. pig-iron production, tons	13,789,242	27,200,000	30,582,878
U. S. copper production, tons	270,588	487,925	639,000

Transportation.

Railroad mileage	198,964	244,934	260,014
Railroad gross earnings	\$1,501,695,378	\$2,737,000,000	\$5,338,822,558
Postoffice receipts.....	102,354,579	224,128,637	436,239,126

Agriculture.

Farm animals, value ^{fi} .	\$2,228,123,134	\$5,138,486,000	\$8,566,313,000
Cattle, number	43,902,414	69,080,000	68,232,000
Horses, "	13,537,524	20,040,000	21,109,000
Sheep, "	41,883,000	57,216,000	48,615,000
Mules, "	2,086,027	4,123,000	4,895,000
Swine, "	37,079,356	47,782,000	72,909,000
Farm products, value.	\$3,764,177,706	\$8,926,000,000	\$16,025,000,000
U. S. wool production, pounds	288,636,621	321,362,750	314,239,000
World's wheat crop, bushels	2,583,389,000	3,590,000,000	2,267,074,000
U. S. wheat crop, bush	522,229,505	695,443,000	794,147,000
U. S. corn crop, bush..	2,105,102,513	3,125,713,000	3,003,322,000

Cotton Production and Consumption.

U. S. cotton crop, val.	\$554,000,000	\$900,000,000	\$2,172,324,388
U. S. commercial cotton crop, bales	10,383,000	12,000,000	12,443,000
World's cotton con- sumption, bales	15,185,000	18,321,000	15,970,000
U. S. consumption of cotton, bales	3,588,501	4,798,953	6,425,344
World's cotton spindles, number	106,290,000	134,526,000	150,000,000
U. S. cotton exports, bales	6,201,166	6,484,429	6,915,408
U. S. cotton exports, value	\$302,500,000	\$460,868,200	\$1,381,707,502
End of year price spot cotton, N. Y.	10.10	15.00	39.25

BIRD'S EYE VIEW OF THE UNITED STATES.

(America at Work)

POPULATION.

Population of Continental United States in 1910	91,972,000
Census estimate on July 1, 1918.....	105,000,000
Gain of more than.....	13,000,000
Death losses of the war were about.....	60,000

During the first 3 years of the war, in which the excess of deaths over births in the uninvaded areas of France amounted to 883,000, the net increase in the population of the United States, as estimated by the experts of the Census Department, was 4,500,000. While the populations of the European nations have been wasting away, the population of the United States has been going forward by leaps and bounds.

WAR DEBT.

Secured bonds	\$21,434,330,000
War Savings Stamp	933,000,000
Floating Treasury Certificates, September 1, 1919	4,208,000,000

GOLD SUPPLY.

Total gold U. S. Treasury and Federal Reserve Banks, September 12, 1919.....	\$2,415,000,000
--	-----------------

GOLD AND PAPER MONEY.

Federal Reserve Notes in actual circulation, August 11.....	\$2,532,000,000
Treasury Notes, 1890	1,724,000
U. S. Notes (Greenbacks).....	346,681,000
National Bank Notes	724,563,000
Total Paper Money	3,604,968,000
Total Gold in Treasury September 1.....	2,415,168.72

FOREIGN TRADE.

For 11 months, ending May, 1919.

Total Exports	\$6,307,000,000
Total Imports	2,803,000,000
Export Balance	3,504,000,000

In interpreting this balance, three things must be borne in mind:

1. The United States is now a creditor nation, hence goods were not shipped to pay interest or dividends, as in former years.

2. The United States today is the second commercial power on the ocean, therefore the item of ocean freights paid for by exports is greatly reduced.

3. There is today practically no American travel for pleasure in Europe, which eliminates a considerable item from invisible adverse trade balance.

U. S. MERCHANT MARINE.
(*Lloyd's Statistics*)

Steam sea-going tonnage, June, 1914.....	2,027,000
Steam sea-going tonnage, June, 1919.....	9,773,000
Increase, 382 per cent.	
U. S. foreign commerce carried in American bottoms, fiscal year, 1914.....	8 per cent.
U. S. foreign commerce carried in American bottoms, fiscal year, 1919.....	37 per cent.

OIL.

Production, 1918	345,000,000 barrels
Production, 1914	266,000,000 barrels

COAL.

Output, 1918	672,000,000
Output, 1914	530,000,000 tons

The coal produced thus far in the United States during the first 7 months of the present year, though 24 per cent. less than for the same period last year, is more than the estimated production of Great Britain, France and Germany together for the entire 12 months of the current year. Only when the fact is recalled that these countries produce no petroleum may the advantage of the United States in the matter of fuel be rightly appreciated.

IRON AND STEEL.

Production, 1918	39,000,000 tons
Production, 1914	22,000,000 tons

The total pig iron production in 1918 of Great Britain, France and Germany was less than 22,000,000 tons. The total steel production of the three Eastern nations in 1918 was between 26,000,000 and 27,000,000 tons. The United States alone produced 45,000,000 tons.

WATER POWER.

In 1914, horse power in use, (Census, 1914) . . . 1,826,000

This is more than twice the water power developed in France, which has the greatest water power resources of all the nations of Europe.

WORLD DEBTS BY FREDERIC AUSTIN IN JOURNAL OF COMMERCE.

Mr. Austin points out that the debts of the new nations can not be stated yet, inasmuch as definite figures are lacking. He goes on to present a number of interesting tables showing how the world's debts have been increasing:

NATIONAL DEBTS OF THE WORLD—1713 to 1920*

(As nearly as can be stated)

Period	Amount
1713 Peace of Utrecht	\$ 1,500,000,000
1793 Prior to Napoleonic Wars	2,500,000,000
1816 Following Napoleonic Wars	7,000,000,000
1848 Beginning of Crimean War	8,400,000,000
1861 Beginning of U. S. Civil War	13,400,000,000
1873 Close of Franco-Prussian War	22,400,000,000
1897 Prior to Spanish-American, Boer, Russo-Japanese, and Balkan Wars	30,200,000,000
1914 European War	44,100,000,000
1915 European War	56,900,000,000
1916 European War	120,485,000,000
1917 European War	199,100,000,000
1918 European War	225,300,000,000
1919 European War	248,000,000,000
1920 European War	255,000,000,000

*Stated at par or face value of outstanding obligations.

AGGREGATE FUNDED DEBT ISSUES, 1914 TO 1920, BY CHIEF PARTICIPANTS IN THE WAR.

	Average Issue Price	Par Value	Amount Actually Received from Subscribers
United States ..	100.00	\$21,472,000,000	\$21,472,000,000
Australia	100.00	1,029,000,000	1,029,000,000
New Zealand...	100.00	187,000,000	187,000,000
*India	100.00	331,000,000	331,000,000
Canada	99.39	1,982,000,000	1,970,000,000
Great Britain..	96.45	26,428,000,000	25,489,000,000
France	75.74	12,598,000,000	9,542,000,000
Italy	90.01	3,026,000,000	2,724,000,000
**Russia	91.94	6,175,000,000	5,677,000,000
Germany	97.84	23,329,000,000	22,826,000,000
Austria	93.70	8,306,000,000	7,790,000,000
Hungary	96.08	3,776,000,000	3,628,000,000

*Down to March, 1918. **Down to April, 1917.

PER CAPITA DEBTS OF PRINCIPAL COUNTRIES, 1913 AND 1920

	1913	1920
United States	\$11	\$225
Great Britain	78	850
France	160	1,150
Italy	83	365
Germany	18	*800
Russia	27	**125
Austria	63	***525
Hungary	70	***387
Australia	18	318
Canada	70	159

*Exclusive of debts of German States. **1917. ***1918.

THE UNITED STATES THE HEAVIEST INVESTOR IN THE WAR.

While the United States may have suffered the least direct damage from the war, its net loss in money is greater than that of any other participant, according to figures submitted to the United States Senate recently by Senator Spencer, of Missouri. The point is that the United States receives practically nothing in recompense from Germany,

whereas Great Britain and France, for instance, receive large sums. Our net loss is \$41,873,948,225, which is \$670,000,000 more than the net loss of any other nation. While the net losses are the largest, those of Japan are about the smallest, totaling about \$232,000,000. Senator Spencer's assertions were based on an account prepared by Fred A. Dolph, and some of Mr. Dolph's figures and conclusions are published in the current *Annalist*. Here is the table showing the comparative war costs as affected by the German indemnity, the divisions of the indemnity being based on Professor Keynes' figures:

Nation	Gross Cost	Credit Indemnity	Final Loss
U. S.	\$44,173,948,225	\$2,300,000,000	\$41,873,948,225
G. Britain	51,052,634,000	9,850,000,000	41,202,634,000
France ..	54,272,915,000	16,000,000,000	38,272,915,000
Italy	18,680,847,000	3,500,000,000	15,180,847,000
Belgium .	8,174,731,000	5,700,000,000	2,474,731,000
China ...	565,376,000	100,000,000	465,376,000
Japan ..	481,818,000	250,000,000	231,818,000

Total. . \$177,402,269,225 \$37,700,000,000 \$139,702,269,225

Mr. Dolph comments on this table as follows:

The Treaty provided that Germany should pay and Germany engaged to pay only three general items of indemnity:

1. Repay Belgium for all foreign loans made by it to prosecute the war, including all fines and taxes imposed by Germany upon Belgian citizens during occupation.

2. All damages to property of civilians.

3. Pension and dependency claims, capitalized on the basis of the French rates.

Ninety-five per cent. of all moneys not spent by the United States was for items not coming under any of those three heads. All of the money spent for cost of operation of the War and Navy Departments, relief-work contributions, and economic assistance of whatever character is a dead loss. We are only to be reimbursed for a little lost shipping and for pensions and dependency claims, at the French rate, which is considerably less than our own; so that no doubt half or two-thirds of our pension and dependency claims will be a dead loss.

The Treaty fixt at the time what was then supposed to be the maximum indemnity that Germany was to pay on account of the three items. She was to give up cer

tain territories in Europe, which were then and there divided and given to Belgium, France, and other countries. The United States, of course, did not ask for or get any of that indemnity. Then she was required to make certain deliveries of coal to Belgium, France, and Italy; of chemicals to France and live stock to both France and Belgium. The overseas possessions in Africa and the Pacific islands, some 847,000 square miles, were to be held for the joint account of all Allies.

Seven hundred thousand dollars in cash was to be raised with which to pay off Belgium's foreign debt, and Germany was to issue some \$25,000,000,000 of bonds, with varying maturities, that were to be delivered to the Reparations Commission, to be by it allotted.

With reference to the overseas possessions of Germany in Africa and the Pacific islands, it was naturally expected that, in view of the fact that France and other European countries had taken the European territories, the overseas possessions would go to England, minus a few islands in the Pacific to the United States. It was never for a minute supposed that Japan would be allotted any of those islands, because she had received her share in Shantung, which seemed to be ample in view of her insignificant participation in the war.

The United States had holdings in the Samoan Islands, and we might expect England to turn Germany's interest in those islands over to America, or at least divide; but not so. The islands north of the equator lie in a string in the path between Hawaii and the Philippines, and it was thought that those islands would be conceded to the United States, but that was not to be. They were given to Japan, whose financial participation in the world-war turns out to be \$30,000,000 against our \$30,000,000,000, or about one-tenth of 1 per cent. of the participation of the United States.

It was never intended that the United States should participate in any manner in the German indemnity, so that whatever it is, large or small, the amount will have no effect upon the final figures representing the net loss.

Mr. Dolph tabulates the war-expenses of the United States as follows:

UNITED STATES

Paid out:

Military cost, as per Secretary Houston.	\$24,010,000,000
Extra cost government functions under war conditions, as per Secretary of the Treasury	4,500,000,000
Civilian damages, lost shipping, and pensions to be paid	2,300,000,000
Red-Cross contributions	978,512,225
Other contributions estimated at one-half Red Cross amount	490,000,000
Congressional European relief	100,000,000
Credit extended by Grain Corporation..	60,375,000
Credit given by War Department.....	50,000,000
Credit given by Shipping Board.....	3,580,000
Credit given by American nationals to European nationals, as per bulletin of Bankers Trust Company	1,921,481,000
Government loans to European nations, including unpaid interest	9,760,000,000
Total	\$44,173,948,225

Credit:

Received an amount of German shipping not known, but it is expected that the amount, together with other receipts, will reach the sum of \$2,300,000,000, the amount of the civilian loss, pensions, etc.

Great Britain's total war cost—\$51,052,634,000—is reached by adding to the increased indebtedness of \$39,902,634,000, the \$1,300,000,000 of abnormal taxation and \$9,850,000,000. French borrowings and war-taxations come to \$38,272,925,000, and with \$16,000,000,000 for civilian damages and pensions total \$54,272,915,000. Against this France can credit the wealth of Alsace-Lorraine, coal, chemicals, and live stock from Germany, and \$15,000,000,000 of German bonds. Similarly, Belgium, with \$3,174,731,000 of war taxes and borrowings and five billions more in damages and pensions, can credit herself with a small piece of German territory; coal and live stock from Germany; cash or first lien bonds to pay off \$700,000,000 in foreign loans; and an allotment of \$4,000,000,000 in German reparations bonds. Japan paid out \$231,818,000 and is out \$250,000,000 more for damages and pensions, a total of \$481,818,000. She can set over against this 1,040

square miles of Pacific islands, Shantung with its 308 miles of railroad and its forty mines, and all the German cables belonging to both. Italy's war taxes and borrowings amount to \$15,180,847,000; damages and pensions bring the total to \$18,680,847,000. Italy can balance against this 85,500,000 tons of coal, 12,000 square miles of Austrian territory, and an allotment of \$3,000,000,000 of bonds. China's war expenses, by deducting prewar national debts, are shown to be \$465,376,000; \$100,000,000 of civilian damages and pensions bring up the total to \$565,376,000. On the credit side are the cancellation of the Boxer indemnity, \$97,875,000; and German property in China, \$2,125,000.

NATIONAL DEBTS OF THE WORLD, 1913, 1918, 1919, 1920

(As nearly as can be stated by the National City Bank of New York.)
In United States Dollars, Reduced at Normal Pre-War Value of the Respective Currencies.*

	Pre-War 1913	Armistice Period 1918	First Peace Year 1919	Second Peace Year 1920
Argentina	\$732,398,000	\$866,380,000	(h) \$866,380,000	\$531,000,000
Australia	80,753,000	975,738,000	1,583,000,000	1,950,000,000
Australia States	1,348,624,000	(c) 1,741,301,000	(f) 1,813,000,000	(f) 1,831,000,000
Austria (f)	2,152,490,000	16,475,000,000	17,688,000,000	16,807,000,000
Belgium	(c) 825,269,000	.....	2,509,000,000	2,750,000,000
Bolivia	10,369,000	23,307,000	26,500,000	(i) 26,500,000
Brazil	(a) 663,667,000	(f) 1,073,826,000	(h) 1,118,546,000	1,223,000,000
British Colonies (not herein named)	65,000,000	78,000,000	(h) 78,000,000	102,000,000
British West Africa	55,200,000	(f) 67,100,000	(h) 63,000,000	(h) 63,000,000
British West Indies	29,100,000	(f) 30,200,000	(h) 32,800,000	(h) 32,800,000
Bulgaria	(a) 135,300,000	800,000,000	2,158,000,000	(i) 2,158,000,000
Canada	544,391,000	1,300,000,000	2,250,000,000	2,276,000,000
Ceylon	30,011,000	27,100,000	(h) 27,100,000	(i) 27,100,000
Chile	207,704,000	228,377,000	(h) 228,377,000	(h) 228,377,000
China	969,189,000	(e) 1,060,649,000	(e) 1,066,649,000	1,534,575,000
Chosen	21,837,000	46,652,000	(h) 46,652,000	(h) 46,652,000
Colombia	24,234,000	22,856,000	(h) 22,856,000	(h) 22,856,000
Costa Rica	16,488,000	(f) 20,254,000	(f) 20,254,000	(f) 20,254,000
Cuba	(c) 67,620,000	(e) 65,923,000	(h) 63,289,000	(h) 63,289,000
Czecho-Slovakia (f) .....	.....	1,500,000,000	1,500,000,000	7,000,000,000
Denmark	95,579,000	161,700,000	(h) 161,700,000	206,000,000
Dominican Republic	(c) 13,218,000	13,686,000	13,358,000	(i) 13,358,000
Dutch East Indies .....	.....	(e) 91,871,000	(e) 91,871,000	(c) 91,871,000
Ecuador	19,780,000	25,756,000	(h) 25,756,000	(h) 25,756,000
Egypt	459,153,000	455,338,000	(h) 469,338,000	(h) 469,338,000
Fin and	33,706,000	(e) 34,618,000	(e) 34,618,000	35,700,000
France	6,346,129,000	39,400,000,000	39,843,000,000	46,025,000,000
French Colonies	(a) 210,667,000	(g) 476,711,000	(h) 579,711,000	(h) 579,711,000
Germanay	1,194,052,000	40,000,000,000	48,552,000,000	57,200,000,000
German States	3,854,795,000	(f) 4,341,611,000	4,500,000,000	8,300,000,000
German Colonies	32,410,000	(g) 32,410,000	(g) 32,410,000	(g) 32,410,000
Greece	206,640,000	(f) 259,725,000	469,367,000	(i) 469,367,000
Guatemala	17,577,000	(f) 16,230,000	(f) 16,230,000	(f) 16,230,000
Haiti	(a) 42,863,000	(c) 30,373,000	(f) 24,983,000	(h) 23,970,000
Honduras	121,261,000	130,758,000	131,771,000	(i) 131,771,000

Hungary (f)	1,731,350,000	8,513,848,000	9,412,000,000	11,403,000,000
Iceland	47,200,000	51,300,000	52,600,000	(i) 52,600,000
India, British	(a) 1,475,272,000	(f) 1,546,237,000	2,220,000,000	(i) 2,310,000,000
Italy	2,921,153,000	12,000,000,000	13,102,000,000	18,330,000,000
Japan	1,241,997,000	1,244,375,000	(h) 1,246,375,000	1,300,000,000
Jugo-Slavia				705,000,000
Latvia				(i) 10,895,000
Liberia	(c) 1,600,000	(f) 1,685,000	(f) 1,685,000	(f) 1,685,000
Lithuania				(i) 27,000,000
Luxembourg	(b) 2,091,000	(f) 8,831,000	(f) 8,831,000	(f) 8,831,000
Mexico	(a) 226,404,000	377,333,000	490,000,000	(i) 500,000,000
Netherlands	(c) 461,649,000	(f) 762,527,000	981,349,000	1,072,000,000
New Zealand	438,271,000	734,000,000	856,875,000	(i) 856,875,000
Newfoundland	27,450,000	34,870,000	35,000,000	(i) 35,000,000
Nicaragua	9,182,000	(f) 18,596,000	(f) 18,596,000	(f) 18,596,000
Norway	97,215,000	197,409,000	(h) 197,408,000	250,000,000
Panama	5,100	(e) 7,172,000	7,101,000	(i) 7,101,000
Paraguay	12,751,000	13,515,000	(h) 13,515,000	(h) 13,515,000
Persia			45,000,000	(i) 45,000,000
Peru	34,268,000	(e) 34,015,000	(e) 34,015,000	(e) 34,015,000
Philippines	12,000,000	(f) 20,301,000	20,470,000	(i) 20,470,000
Poland			1,356,600,000	9,500,000,000
Portugal	947,603,000	1,289,646,000	(h) 1,289,646,000	(h) 1,289,646,000
Rumania	316,693,000	(d) 355,194,000	(h) 1,022,000,000	4,100,000,000
Russia	(c) 4,537,861,000	(f) 25,000,000,000	(f) 25,000,000,000	(f) 25,000,000,000
Salvador	9,970,000	11,098,000	(h) 11,098,000	(h) 11,098,000
Sierra Leone	27,799,000	32,935,000	32,616,000	(i) 32,616,000
Spain	(c) 1,814,270,000	(f) 1,964,206,000	1,985,774,000	2,374,000,000
Straits Settlements	33,827,000	(f) 37,100,000	57,424,000	(i) 57,424,000
Sweden	161,390,000	(f) 249,298,000	336,420,000	3404,000,000
Switzerland	(a) 23,614,000	205,439,000	(h) 205,439,000	350,000,000
Turkey	675,654,000	(f) 1,459,000,000	(h) 2,000,000,000	(i) 2,300,000,000
Union South Africa	573,415,000	780,766,000	(h) 780,766,000	(h) 780,766,000
United Kingdom	3,485,818,000	36,391,000,000	39,314,000,000	37,910,000,000
United States	1,028,564,000	17,005,431,000	25,672,000,000	24,062,510,000
Uruguay	137,827,000	164,308,000	(h) 164,308,000	(h) 164,308,000
Venezuela	35,051,000	28,983,000	(h) 28,983,000	(h) 28,983,000
Total	\$43,106,495,000	\$211,520,040,000	\$256,072,410,000	\$297,607,819,000

(a) 1912. (b) 1910. (c) 1914. (d) 1915. (e) 1916. (f) 1917. (g) 1913. (h) 1918. (i) 1919. (j) Includes share of Austro-Hungarian debt.

*Figures of 1918, 1919 and 1920 are as nearly as practicable those of the Armistice date, November 11.

WORLD PAPER CURRENCY, BY GRAND DIVISIONS, 1914 TO 1920†.
(In millions of dollars)

	Europe	North America	South America	Asia	Ocean	Africa
1914	5,058	1,223	701	420	95	24
1918	35,255	4,309	1,324	839	335	230
1919	46,007	4,615	1,358	1,326	376	341
1920	72,142	5,135	2,157	1,241	346	260

WORLD NATIONAL DEBTS, BY GRAND DIVISIONS, 1913 TO 1920.
(In millions of dollars.)

	Europe	North America	South America	Asia	Ocean	Africa
1913	32,159	1,243	1,885	3,799	1,879	1,152
1918	181,363	19,150	2,480	4,001	3,563	1,381
1919	212,150	28,725	2,529	4,742	4,364	1,377
1920	257,430	27,303	2,401	5,264	4,750	1,406

WORLD NATIONAL DEBTS AND PAPER CURRENCY, 1914 TO 1920.
(As nearly as can be stated†).

Reduced to United States currency at par (pre-war) value of the respective currencies.

	National Debts	Paper Currency*
1914	\$43,889,000,000	\$7,527,000,000
1915	46,900,000,000	8,562,000,000
1916	56,902,000,000	19,608,000,000
1917	120,485,000,000	32,747,000,000
1918	211,500,000,000	43,091,000,000
1919	256,020,000,000	54,782,000,000
1920	297,604,000,000	81,596,000,000

*Exclusive of issues of Soviet Government estimated at \$34,000,000,000 at end of 1919.

†Exact statements of total world debts or currency for any fixed date are obviously impracticable, by reason of the fact that in many of the minor and recently organized countries, official statements are issued at irregular intervals and not infrequently delayed in their presentation.

PART IV.—WORLD-WIDE TRADE FACTS.
THE STATISTICAL STORY OF 1920.

AGRICULTURAL YIELDS

(Bradstreet's)

AGRICULTURAL VALUES

	Yields, 1920	Change from 1919	Past Records	Year		Value, 1920	Change from 1919	Past Records	Year
Corn, bushels	3,232,367,000	Inc. 13.0	3,124,746,000	1912	Corn	\$2,189,721,000	Dec. 43.1	\$3,920,228,000	1917
Winter wheat, bushels	580,513,000	Dec. 20.4	729,503,000	1919	Winter wheat	866,741,000	Dec. 43.6	1,538,292,000	1919
Spring wheat, bushels	209,365,000	Inc. 2.1	356,339,000	1918	Spring wheat	273,465,000	Dec. 41.9	715,831,000	1918
All wheat, bushels	789,878,000	Dec. 15.4	1,025,801,000	1915	All wheat	1,140,206,000	Dec. 43.2	2,009,407,000	1919
Oats, bushels	1,524,055,000	Inc. 23.8	1,592,740,000	1917	Oats	719,782,000	Dec. 18.2	1,090,322,000	1918
Barley, bushels	202,024,000	Inc. 25.2	256,225,000	1918	Barley	142,931,000	Dec. 26.7	240,758,000	1917
Rye, bushels	69,318,000	Dec. 22.0	91,041,000	1918	Rye	88,609,000	Dec. 25.8	138,038,000	1918
Rice, bushels	53,710,000	Inc. 25.5	42,790,000	1919	Rice	63,837,000	Dec. 44.0	114,152,000	1919
Buckwheat, bushels	13,789,000	Dec. 9.5	22,792,000	1866	Buckwheat	17,797,000	Dec. 20.5	28,142,000	1918
Total, 7 cereals, bushels	5,885,141,000	Inc. 8.6	5,896,528,000	1915	Total, seven cereals	\$4,362,883,000	Dec. 39.3	\$6,863,552,000	1918
Flaxseed, bushels	10,990,000	Inc. 43.4	29,285,000	1902	Flaxseed	\$ 19,413,000	Dec. 42.1	\$ 45,470,000	1918
Potatoes, white, bushels	430,458,000	Inc. 20.3	442,108,000	1917	Potatoes, white	500,974,000	Dec. 12.8	574,764,000	1919
Potatoes, sweet, bushels	112,368,000	Inc. 6.5	105,405,000	1919	Potatoes, sweet	126,629,000	Dec. 10.0	140,706,000	1919
Hay, tame, tons	91,193,000	Dec. .7	91,883,000	1919	Hay, tame	1,613,896,000	Dec. 12.6	1,846,083,000	1919
Hay, wild, tons	17,040,000	Dec. 1.2	21,345,000	1915	Hay, wild	195,266,000	Dec. 32.3	288,498,000	1919
All hay, tons	108,233,000	Dec. .8	110,992,000	1916	All hay	1,809,162,000	Dec. 15.2	2,134,581,000	1919
Tobacco, pounds	1,508,064,000	Inc. 3.0	1,463,325,000	1919	Tobacco	298,001,000	Dec. 47.6	569,608,000	1919
Cotton, bales	12,987,000	Inc. 13.6	16,135,000	1914	Cotton	914,590,000	Dec. 55.0	2,034,558,000	1919
Cottonseed, tons	5,778,000	Inc. 13.8	7,186,000	1914	Cottonseed	150,237,000	Dec. 59.2	368,626,000	1919
Beet sugar, pounds	2,219,200,000	Inc. 52.8	1,748,000,000	1915	Peanuts	48,829,000	Dec. 40.2	81,742,000	1919
Cane sugar (La.), pounds	372,000,000	Inc. 53.7	706,000,000	1911	Beans	27,114,000	Dec. 46.8	100,692,000	1917
Peanuts, bushels	35,960,000	Inc. 6.0	52,505,000	1917	Kaffirs	131,665,000	Dec. 20.2	165,030,000	1919
Beans, bushels	9,075,000	Dec. 24.0	17,733,000	1918	Onions	25,179,000	Inc. 3.5	26,957,000	1918
Kaffirs, bushels	143,739,000	Inc. 12.8	127,568,000	1919	Cabbage	25,266,000	Inc. 34.7	25,344,000	1918
Onions, bushels	19,119,500	Inc. 67.7	19,336,000	1918	Hops	14,194,000	Dec. 37.3	22,656,000	1919
Hops, pounds	38,918,000	Inc. 32.6	52,986,000	1915	Cranberries	5,496,000	Inc. 16.0	4,734,000	1919
Cranberries, bushels	431,000	Dec. 23.8	566,000	1919	Apples	271,984,000	Dec. 4.6	285,069,000	1919
Apples, bushels	240,646,000	Inc. 57.0	253,200,000	1914	Peaches	91,862,000	Dec. 3.1	94,818,000	1919
Peaches, bushels	43,697,000	Dec. 11.8	64,097,000	1915	Pears	27,220,000	Dec. 3.5	28,238,000	1919
Oranges, boxes	27,200,000	Inc. 23.2	24,200,000	1918	Oranges	70,125,000	Inc. 18.9	89,105,000	1918
					Total, all crops	\$9,148,519,000	Dec. 35.6	14,087,995,000	1919

FINANCE AND INDUSTRY.

	1920	Change from 1919	Past Records	Year
Bank clearings, United States	\$446,441,948,669	Inc. 7.6	\$414,752,812,927	1919
Bank clearings, New York	\$243,135,013,363	Inc. 3.1	\$235,802,634,887	1919
Bank clearings outside New York	\$203,306,935,306	Inc. 13.6	\$178,950,178,040	1919
Imports of merchandise (estimated)	\$5,334,000,000	Inc. 36.6	\$3,904,364,932	1919
Exports of merchandise	\$8,182,000,000	Inc. 3.3	\$7,920,425,990	1919
Total foreign trade (estimated)	\$13,516,000,000	Inc. 14.3	\$11,824,790,922	1919
Exports of gold (eleven months)	\$305,132,921	Dec. 5.2	\$367,345,748	1917
Imports of gold (eleven months)	\$372,403,534	Inc. 485.5	\$535,388,500	1917
Exports of silver (eleven months)	\$107,535,304	Dec. 48.4	\$208,426,260	1919
Imports of silver (eleven months)	\$83,434,399	Inc. 4.6	\$79,725,206	1919
Gold produced, value	\$48,000,000	Dec. 20.4	\$101,035,700	1915
Silver produced, ounces	44,000,000	Dec. 22.3	74,961,075	1915
Circulation December 1, total	\$6,363,498,999	Inc. 7.3	\$5,993,627,863	1918
Circulation per capita	\$59.41	Inc. 6.7	\$56.23	1918
New York stock sales, shares	223,931,349	Dec. 28.4	312,875,250	1919
New York bond sales, value	\$3,955,036,900	Inc. 4.8	\$3,771,517,175	1919
Municipal bond sales	\$744,967,626	Dec. 3.4	\$770,195,248	1919
New domestic securities issued	\$3,106,930,590	Inc. 2.8	3,021,171,300	1919
Business failures, number	8,595	Inc. 55.8	19,035	1915
Failures liabilities	\$416,997,949	Inc. 260.9	\$383,711,658	1907
Fire losses (estimated)	\$320,000,000	Inc. 19.0	\$269,000,775	1919
Railway gross earnings (estimated)	\$6,210,000,000	Inc. 20.0	\$5,184,230,244	1919
Railway net earnings (estimated)	\$500,000,000	Dec. 34.5	\$1,190,566,335	1917
Price Index (<i>Bradstreet's</i>), annual number	\$18.81	Inc. .8	\$18.71	1918
Incorporations in Eastern States	\$13,998,944,200	Inc. 10.4	\$12,677,229,600	1919
Brass exports (ten months)	\$11,751,112	Dec. 1.9	\$263,357,881	1916
Wheat exports (ten months)	\$467,452,508	Inc. 56.8	\$298,083,272	1919
Wheat-flour exports (ten months)	\$201,629,153	Dec. 22.1	\$258,957,235	1919
All wheat (including flour) exports (ten months)	\$669,081,661	Inc. 20.0	\$557,040,507	1919
All breadstuffs (ten months)	\$883,074,983	Inc. 11.3	\$792,814,020	1919
Copper exports (ten months)	\$116,610,375	Inc. 11.1	\$300,613,647	1917
Cotton exports (ten months)	\$952,950,851	Inc. 22.8	\$775,413,702	1919
Explosive exports (ten months)	\$46,151,561	Inc. 126.6	\$583,191,508	1917
Iron and steel exports (ten months)	\$885,222,563	Inc. 6.1	\$1,024,643,482	1917
Meat and dairy product exports (ten months)	\$451,995,922	Dec. 56.3	\$1,035,066,538	1919
Horse and mule exports (ten months)	\$3,977,000	Inc. 26.5	\$104,388,938	1915
Automobile exports (ten months)	\$247,044,636	Inc. 104.0	\$121,125,847	1919
Chemicals, etc., exports (ten months)	\$144,339,552	Inc. 31.2	\$156,524,373	1917

Coal exports (ten months)	\$350,715,590	Inc.	134.5	\$140,577,358	1919
Cotton manufactures exports (ten months)	\$347,034,161	Inc.	57.8	\$219,885,581	1919
Leather and manufactures exports (ten months)	\$170,782,960	Dec.	32.7	\$254,047,144	1919
Oil, mineral, exports (ten months)	\$439,603,042	Inc.	58.2	\$284,300,392	1918
Building expenditure (estimated)	1,375,000,000	Inc.	9.5	1,310,398,691	1919
Ship-building, tons (estimated)	2,900,000	Dec.	53.4	6,229,323	1919
Iron-ore shipments by lake, tons	58,527,226	Inc.	24.0	64,734,198	1916
Lake commerce, tons (estimated)	82,000,000	Inc.	20.6	91,888,219	1916
Unfilled United States Steel orders, tons, November 30.....	9,021,481	Inc.	26.5	11,058,542	1916
Cotton consumption (eleven months), bales	5,546,902	Inc.	2.4	6,314,137	1917
Pig-iron production, tons	36,414,114	Inc.	19.0	39,039,356	1916
Bituminous coal produced, tons (estimated)	556,000,000	Inc.	21.5	579,386,000	1918
Anthracite coal shipments, tons (estimated)	68,000,000	Inc.	1.7	78,156,160	1917
Allen immigrants arrived (fiscal year)	621,576	Inc.	102.2	1,403,681	1914
Wheat (including flour) receipts (primary), cereal season.....	488,296,000	Dec.	3.7	507,246,000	1919
Petroleum production, barrels (estimated)	450,000,000	Inc.	18.4	380,000,000	1919
Copper from domestic ores, pounds	1,350,000,000	Inc.	5.6	1,908,000,000	1918

The following tables are taken from *Bradstreet's*:

FAILURES SINCE 1881.

Year.	No. Failures.	Total Liabilities. Millions.	Per Cent. Failing.
1920	8,463	\$426.3	.43
1919	5,515	115.5	.29
1918	9,331	137.9	.51
1917	13,029	166.6	.71
1916	16,496	175.2	.92
1915	19,035	284.1	1.07
1914	16,769	357.1	.95
1913	14,551	292.3	.84
1912	13,812	198.9	.82
1911	12,646	188.1	.77
1910	11,573	188.7	.72
1909	11,845	140.7	.76
1908	14,044	295.9	.94
1907	10,265	383.7	.70
1906	9,385	127.2	.66
1905	9,967	121.8	.73
1904	10,417	143.6	.79
1903	9,775	154.3	.76
1902	9,973	105.5	.80
1901	10,648	130.1	.88
1900	9,912	127.2	.85
1899	9,642	119.8	.85
1898	11,615	141.6	1.06
1897	13,083	158.7	1.20
1896	15,094	246.9	1.40
1895	12,958	158.7	1.23
1894	12,724	151.5	1.21
1893	15,508	382.1	1.46
1892	10,270	108.6	.99
1891	12,394	193.1	1.21
1890	10,673	175.0	1.07
1889	11,719	140.7	1.20
1888	10,587	120.2	1.10
1887	9,740	130.6	1.04
1886	10,568	113.6	1.15
1885	11,116	119.1	1.25
1884	11,620	248.7	1.32

Year.	No. Failures.	Total Liabilities. Millions.	Per Cent. Failing.
1883	10,299	175.9	1.20
1882	7,635	93.2	.93
1881	5,929	76.0	.76

The record of 1920 by months we take from *Dun's Review* as follows, the totals being approximately the same as those of *Bradstreet's*:

	1921	1920
January	1,895	569
February	492
March	566
April	504
May	547
June	674
July	681
August	673
September	677
October	923
November	1,050
December	1,525

Dun's notes that failures in the first week in February of this year numbered 360, as against 386 the week before and 485 in the preceding week.

Table showing the relative wholesale prices of a large number of commodities on February 1 of the last seven years. These prices are compared with the average price on February 1 of the five years 1910-1914, this average price being par of 100. These are the figures as compiled by *The Bache Review* from statistics prepared by the Bankers' Economic Service:

Article.	1915	1916	1917	1918	1919	1920	1921
Cotton	65	91	112	238	204	299	108
Wheat	156	133	161	218	234	234	146
Corn	136	131	158	206	193	224	106
Oats	148	123	126	192	137	203	100
Rye	113	134	189	280	192	221	187
Barley	119	108	162	224	130	198	89

Article.	1915	1916	1917	1918	1919	1920	1921
Hogs	89	101	154	212	225	203	131
Cattle	137	147	165	210	334	299	143
Lambs	122	145	197	243	271	289	136
Pork	100	106	141	242	196	202	115
Lard	108	97	153	243	218	225	125
Sugar	110	128	143	158	191	329	147
Coffee	59	71	81	79	149	144	63
Silver	86	100	136	153	179	239	102
Copper	100	179	220	161	145	133	89
Tin	91	100	119	164	171	145	81
Iron	85	137	228	229	222	267	214
Steel	82	139	273	200	188	227	183
Spelter	131	320	163	134	112	156	86
Lead	86	143	190	161	115	197	112
Petroleum	103	99	99	132	145	198	198
Cottonseed-oil	106	121	184	305	264	320	121
Rubber	59	73	77	57	58	45	18
Hides	125	231	161	154	158	187	62
Tea	126	131	170	224	187	201	101
Rice	98	93	96	152	172	245	114
Wool	100	113	169	263	211	336	127
Silk	87	138	147	151	161	475	171
Coal, bituminous ...	91	100	120	197	208	208	226
Brick	89	140	141	155	233	388	264
Cement	100	118	142	152	268	239	317
Lumber	85	86	122	180	185	207	222

It is noted that "building materials have not begun to approach normal, and the prospect is that a considerable period will elapse before such a state is reached."

For instance:

Cement is still 217 per cent. above the pre-war average, brisk 164 per cent., and lumber 122 per cent. Iron and steel, which have been adjusted a little further than these, are still 114 per cent. and 83 per cent. respectively in excess of the five-year average. Except for building materials, coal stands at the highest point, with petroleum second.

SHOWS DECLINES AND GAINS IN VALUE OF FARM PRODUCTS.

(Market News Letter Feb. 2, 1921).

Animals Found to Lag Behind Crops in Price Movements

Drop in Values Was Almost Entirely Confined to Crops
in 1920, with Corn Among the Worst Sufferers—
Ten Crops, Chiefly Oranges, Made Notable Gains.

The value of farm crops of 1920 and of the farm animal products and animals sold and slaughtered, as finally determined by the Bureau of Crop Estimates, United States Department of Agriculture, is 19,856,000,000, or \$5,105,000,000 below the total of 1919. The drop is almost entirely confined to crops, among which the chief declines in value are: Corn, \$1,662,000,000; cotton lint and seed, \$1,300,000,000; wheat, \$854,000,000; hay, tame and wild, \$325,000,000; tobacco, \$248,000,000; and oats, \$161,000,000.

TEN CROPS SHOW GAIN.

On the other hand, as many as 10 crops gained in value, chief of which are oranges, with a gain of \$32,000,000, and sugar beets, \$24,000,000. Other items of gain are cabbage, \$11,000,000; cowpeas, \$10,000,000; sorghum cane sold and sirup made, \$7,000,000. Small gains were made by soy beans, sugar-beet seed, maple sugar and sirup, and onions. Apparently, the products of the farm wood lot have gained \$223,000,000 in value in the comparison with 1919.

After offsetting gains against losses, the net crop-value reduction in 1920 below 1919 is \$4,868,000,000, while only \$237,000,000 is found in the total of farm animal products and farm animals sold and slaughtered. The wool decline is as yet unrealized, but it is reckoned at \$37,000,000. Of the animals sold and slaughtered, the decline for cattle and calves is \$223,000,000, and for swine, \$427,000,000. But on the other side of the account, dairy products gained \$311,000,000, and poultry raised and eggs producer, \$160,000,000.

It is the rule that, in the upward and downward movements of prices, farm animals and animal products lag

behind crops. So extreme was the lag in the price of animals and animal products in 1920, on account of the extraordinary fall in the prices of crops within a short period of time, that the total crop value of 1920 is reckoned to be only 56 per cent. of the total value of all farm products. In the estimates for a long series of years, this is the first crop-value estimate that has fallen below 60 per cent. of the total of all products.

OFFICIAL REPORT SHOWS DECREASE IN LIVE STOCK.

Prices of live stock, meat, and by-products on January 1, 1921, were sharply lower than on January 1, 1920. The Government estimate of the value of cattle, swine, and sheep on farms and ranges on January 1, 1921, shows that the aggregate value of these animals had declined considerably as compared with their value on January 1, 1920 but was still considerably above the pre-war value, as is shown by the following table:

MILK COWS.

	Number	Value per Head	Aggregate Value
Jan. 1, 1921	23,321,000	\$63.97	\$1,491,900,000
Jan. 1, 1920	23,619,000	85.11	2,010,128,000
Jan. 1, 1911-15 av.	20,804,000	46.77	973,046,000
Jan. 1, 1910	20,625,000	35.29	727,802,000

OTHER CATTLE.

Jan. 1, 1921	42,870,000	\$31.41	\$1,346,665,000
Jan. 1, 1920	44,750,000	43.22	1,934,185,000
Jan. 1, 1911-15 av.	37,178,000	26.41	981,720,000
Jan. 1, 1910	41,178,000	19.07	785,261,000

SHEEP.

Jan. 1, 1921	45,067,000	\$ 6.41	\$228,732,000
Jan. 1, 1920	47,114,000	10.52	495,660,000
Jan. 1, 1911-15	51,430,000	3.96	203,643,000
Jan. 1, 1910	52,448,000	4.12	216,030,000

SWINE.

Jan. 1, 1921	66,649,000	\$12.99	\$ 865,633,000
Jan. 1, 1920	71,727,000	19.01	1,363,269,000
Jan. 1, 1911-15 av.	63,152,000	9.48	598,407,000
Jan. 1, 1910	58,186,000	9.17	533,309,000

AVERAGE OF PRICES RECEIVED BY PRODUCERS OF THE UNITED STATES.

Prices of articles quoted below as 1st of month are averages of reports of county crop reporters, weighted according to relative importance of county and State; 15th of month prices are averages of return from a list of about 7,000 country buyers; State averages are weighted according to their relative importance to obtain the United States averages.

Date.	Wheat.	Corn.	Oats.	Barley.	Rye.	Buck-wheat.	Potatoes.	Sweet potatoes.	Flaxseed.	Apples.	Hay.	Cotton.	Butter.	Eggs.	Poultry.
1912, Jan. 1.....	88.0	62.2	45.1	86.4	82.7	73.7	84.5	83.0	187.1	89.4	13.75	8.4	28.1	29.5	9.8
1913, Jan. 1.....	76.2	48.9	32.2	49.9	63.8	66.8	50.6	80.4	106.2	73.4	11.11	12.2	28.4	26.8	10.7
1914, Jan. 1.....	81.0	69.6	39.1	52.2	62.5	76.6	68.4	79.2	124.2	107.1	11.70	11.7	29.2	30.7	11.5
1915, Jan. 1.....	107.8	66.2	45.0	54.3	90.2	77.9	49.7	79.0	134.8	68.0	10.47	6.6	28.7	31.5	11.2
1916, Jan. 1.....	102.8	62.1	39.1	54.9	85.3	81.5	70.6	64.9	185.9	79.7	10.07	11.4	28.3	30.6	11.4
1917, Jan. 1.....	150.3	90.0	51.4	87.1	118.5	117.2	147.3	90.1	250.7	101.1	10.86	17.1	34.0	37.7	13.9
1918, Jan. 1.....	201.9	134.8	73.9	126.5	170.3	162.7	121.0	117.2	310.8	128.8	18.09	28.9	43.1	46.3	17.9
1919, Jan. 1.....	204.8	144.7	70.8	91.3	150.7	162.9	116.1	142.1	327.7	147.7	19.92	28.7	54.9	57.2	21.7
1920, Jan. 1.....	231.8	140.4	78.2	130.2	152.3	150.7	178.6	138.2	433.6	213.8	20.55	35.9	61.3	64.8	24.6

AVERAGE OF PRICES RECEIVED BY PRODUCERS OF THE UNITED STATES—Continued.

Date.	Hogs.	Beef cattle.	Veal calves.	Sheep.	Lambs.	Wool.	Milk cows.	Horses.	Cabbage.	Onions.	Beans.	Hay.		
												Timothy.	Clover.	Alfalfa.
1912, Dec. 15	6.89	5.33	6.88	4.21	5.70	18.6	48.62	139	1.15	0.84	2.31	.....	.....	.....
1913, Dec. 15	7.16	5.96	7.74	4.46	5.85	16.1	57.19	135	1.75	1.15	2.12	.....	.....	.....
1914, Dec. 15	6.67	6.01	7.61	4.95	6.33	18.6	58.23	130	1.26	.92	2.40	13.69	12.76	9.05
1915, Dec. 15	6.02	5.75	7.61	5.38	7.02	23.3	56.79	126	1.07	1.00	3.30	12.73	10.95	9.52
1916, Dec. 15	8.76	6.56	8.79	6.77	8.72	30.8	63.18	129	3.04	1.76	5.77	12.29	10.86	12.31
1917, Dec. 15	15.73	8.24	10.98	10.44	13.81	58.2	70.16	129	2.28	1.77	7.00	20.31	18.67	20.39
1918, Dec. 15	15.82	9.28	12.31	9.46	12.44	56.2	85.78	121	2.05	1.32	4.86	22.94	21.26	20.74
1919, Dec. 15	12.66	8.63	12.07	8.53	11.85	51.6	95.54	113	3.49	2.46	4.41	23.71	22.60	22.95
1920, Jan. 15	13.36	8.99	12.89	9.34	12.91	53.3	94.42	118	4.31	2.81	4.70	24.59	23.78	24.13
Feb. 15	13.62	8.98	13.12	9.97	14.08	52.5	95.27	123	5.05	3.07	4.47	25.49	24.94	24.41
Mar. 15	13.59	9.08	12.98	10.25	14.17	51.5	94.94	127	5.25	3.26	4.32	26.75	26.13	24.68
Apr. 15	13.73	9.20	12.72	10.66	14.63	51.3	95.36	131	5.59	3.44	4.41	27.99	26.93	24.57
May 15	13.44	8.97	11.69	10.34	14.26	50.3	94.56	132	6.75	3.38	4.36	29.92	28.31	25.68
June 15	13.18	9.32	11.68	9.13	12.82	38.0	94.56	130	5.47	2.64	4.49	30.05	27.80	24.20
July 15	13.65	8.93	11.44	8.21	11.79	29.5	91.23	127	4.71	2.05	4.47	26.59	24.62	21.70
Aug. 15	13.59	8.56	11.64	7.54	10.84	28.3	90.50	124	3.28	1.76	4.17	24.35	22.82	20.43
Sept. 15	13.98	8.29	11.88	7.24	10.71	28.0	89.40	119	2.03	1.73	3.83	24.15	22.57	19.12
Oct. 15	13.57	7.77	11.64	6.62	9.65	27.5	85.90	112	1.95	1.59	3.47	22.74	21.29	18.03
Nov. 15	11.64	7.15	10.77	6.20	9.37	24.9	77.56	103	1.67	1.44	3.27	22.09	20.60	12.88
Dec. 15	8.90	6.38	9.31	5.54	8.45	22.0	70.83	97	1.78	1.31	2.99	21.18	19.91	16.56

AVERAGE OF PRICES RECEIVED BY PRODUCERS OF THE UNITED STATES—Continued.

Date.			Clover seed.	Timothy seed.	Alfalfa seed.	Cotton seed.	Broom corn.	Cowpeas.	Kafir corn.	Bran.	Cottonseed meal	Cottonseed hulls.	Hops.	Peanuts.	Turnips.
1912, Dec.	15.	.....	9.00	1.79	7.86	21.42	57	.....	.....	25.16	30.16	.....	17.8	4.6	49.1
1913, Dec.	15.	.....	7.70	2.10	6.60	23.48	92	.....	.....	26.43	32.36	.....	29.4	4.8	55.1
1914, Dec.	15.	.....	8.12	2.18	7.57	17.73	58	.....	.....	26.72	29.04	.....	13.2	4.3	48.4
1915, Dec.	15.	.....	10.01	2.86	8.88	35.54	101	1.52	.....	25.53	36.45	12.89	12.3	4.2	45.1
1916, Dec.	15.	.....	9.40	2.31	8.56	56.35	172	1.77	1.02	32.49	42.96	17.70	18.2	4.7	73.3
1917, Dec.	15.	.....	12.53	3.37	9.58	68.29	280	2.38	1.67	42.53	55.52	21.73	33.3	7.1	81.4
1918, Dec.	15.	.....	20.67	4.21	9.65	65.05	172	2.38	1.55	38.95	60.64	22.10	19.3	6.1	79.0
1919, Dec.	15.	.....	27.63	4.98	16.68	69.07	163	2.81	1.44	48.79	78.57	17.63	77.2	9.1	101.8
1920, Jan.	15.	.....	28.06	5.35	16.60	69.88	163	3.13	1.37	50.23	79.39	16.78	.....	9.9	112.4
Feb.	15.	.....	31.21	5.62	19.57	69.34	123	3.72	1.39	51.13	79.79	17.01	.....	10.5	124.1
Mar.	15.	.....	31.88	5.61	21.43	67.18	130	3.94	1.30	51.95	79.70	17.39	.....	11.2	.....
Apr.	15.	.....	32.23	5.63	21.80	68.71	145	4.21	1.45	55.26	78.87	19.04	.....	10.9	.....
May	15.	.....	29.84	5.61	22.40	69.88	146	4.84	1.54	58.69	78.74	20.06	.....	11.2	.....
June	15.	.....	26.21	5.46	20.42	66.16	145	4.84	1.54	59.53	78.52	20.73	.....	11.2	.....
July	15.	.....	25.52	5.44	19.41	61.64	113	4.71	1.35	59.91	77.63	21.53	.....	11.0	.....
Aug.	15.	.....	19.97	4.44	16.03	43.22	142	4.23	1.50	56.62	73.84	21.08	62.8	8.5	.....
Sept.	15.	.....	17.77	3.52	14.89	29.96	125	3.69	1.25	55.05	68.22	20.21	.....	8.0	.....
Oct.	15.	.....	13.18	3.25	13.35	28.94	126	2.74	.95	48.43	61.81	16.33	50.6	5.8	.....
Nov.	15.	.....	11.64	3.09	12.25	26.00	123	2.43	.96	44.69	50.96	15.07	48.5	5.3	94.1
Dec.	15.	.....	10.03	3.18	10.24	19.83	88	2.29	.82	41.65	47.97	14.48	30.8	4.7	85.7

VEGETABLES PRODUCED IN 1919—DEPARTMENT OF COMMERCE,
—AGRICULTURE—FOURTEENTH BUREAU OF THE CENSUS—
W. M. STUART, Acting Director.
CENSUS—1920.

The Director of the Census announces, subject to correction, the following preliminary figures from the Census of Agriculture.

STATE	Potatoes (Irish or White).		
	Acres.	Bushels.	Value.
Maine	111,378	25,531,470	\$ 52,339,514
New Hampshire	13,334	1,341,978	2,952,351
Vermont	24,182	2,277,387	5,010,252
Massachusetts	21,558	1,885,655	4,619,855
Rhode Island	3,149	293,087	674,100
Connecticut	18,300	1,372,449	3,362,500
New York	310,403	32,470,847	69,812,321
New Jersey	82,533	10,319,306	21,670,546
Ohio	124,917	7,613,960	17,657,811
Indiana	62,192	2,477,034	6,068,734
Wisconsin	294,424	26,376,021	60,664,851
Minnesota	331,930	26,690,056	57,383,621
Iowa	97,336	4,438,515	10,874,361
Missouri	66,051	4,057,753	10,144,410
North Dakota	82,561	4,717,556	10,142,747
Kansas	47,246	3,014,845	7,084,888
Delaware	8,255	487,668	950,953
Maryland	46,837	4,018,766	9,591,592
West Virginia	34,528	2,809,398	6,461,619
North Carolina	35,797	2,853,797	6,278,351
Florida	17,525	1,767,196	5,301,588
Kentucky	50,069	3,131,377	7,671,876
Tennessee	29,873	1,990,951	4,439,820
Alabama	13,397	886,450	2,304,769
Montana	22,178	1,659,017	3,898,690
Idaho	43,196	6,300,835	13,546,798
Colorado	77,337	8,874,783	19,524,525
New Mexico	3,070	110,740	260,239
Arizona	2,505	174,301	435,755
Utah	12,047	1,648,400	3,494,607
Nevada	3,639	490,727	1,099,223
Washington	55,132	5,866,710	12,320,093
Oregon	40,055	3,538,930	7,431,756

VEGETABLES PRODUCED IN 1919—Continued.

STATE	Sweet Potatoes.			Total.	
	Acres.	Bushels.	Value.	Acres.	Value.
Maine				14,073	2,161,714
N. Hampshire				2,592	427,487
Vermont				1,905	260,441
Massachusetts				26,052	7,622,622
Rhode Island		11	22	2,163	394,100
Connecticut	9	316	758	9,120	1,915,868
New York	16	1,498	3,520	132,042	22,017,396
New Jersey	15,427	1,772,829	3,634,301	94,906	12,473,316
Ohio	2,584	224,774	528,225	62,860	9,532,727
Indiana	3,409	195,515	479,025	59,661	5,607,111
Wisconsin				70,202	5,506,205
Minnesota	2	191	496	14,652	2,223,305
Iowa	3,236	216,578	563,102	73,372	4,901,320
Missouri	11,165	997,606	2,094,979	28,838	2,962,892
N. Dakota				964	116,857
Kansas	4,366	448,986	920,428	11,944	1,379,612
Delaware	9,813	1,505,278	2,634,237	33,360	1,903,017
Maryland	10,185	1,453,890	2,762,373	120,677	9,107,086
West Virginia	2,678	221,378	498,107	8,377	1,056,184
N. Carolina	74,678	7,959,786	11,939,707	14,735	1,718,243
Florida	26,436	2,460,872	3,445,221	60,938	13,695,255
Kentucky	14,892	1,222,651	2,750,979	16,173	1,951,375
Tennessee	39,645	4,452,883	7,347,259	20,877	2,101,743
Alabama	90,868	8,095,404	11,333,568	12,750	1,311,668
Montana				1,273	302,823
Idaho				2,097	400,808
Colorado	334	4,621	12,479	18,438	3,302,158
New Mexico	605	67,987	169,972	4,071	571,959
Arizona	317	34,474	91,356	6,062	956,168
Utah		12	30	8,309	1,164,731
Nevada	7	595	1,547	518	88,329
Washington				9,460	2,263,380
Oregon	10	923	2,122	6,231	1,341,707

VEGETABLES PRODUCED IN 1919—Continued.

STATE	Asparagus.		Beans (green).	
	Acres.	Value.	Acres.	Value.
Maine	4	1,203	529	82,139
New Hampshire.....	13	5,067	195	22,673
Vermont	21	4,435	99	13,864
Massachusetts	1,157	296,086	961	169,249
Rhode Island	50	9,916	197	26,527
Connecticut	141	41,149	438	91,844
New York	694	154,473	6,628	814,127
New Jersey	3,603	718,574	6,091	647,345
Ohio	292	71,085	2,068	282,419
Indiana	78	14,786	805	92,654
Wisconsin	43	11,995	2,548	185,161
Minnesota	203	41,989	210	33,045
Iowa	172	23,681	167	23,598
Missouri	84	20,532	1,024	162,692
North Dakota .....	.....	.....	46	3,565
Kansas	115	19,938	191	25,379
Delaware	177	32,118	218	15,771
Maryland	393	73,966	5,187	513,419
West Virginia	10	2,938	2,364	209,740
North Carolina	47	4,971	1,500	142,160
Florida .....	.....	.....	8,522	1,123,842
Kentucky	28	6,143	3,358	271,784
Tennessee	51	4,988	4,322	285,519
Alabama	59	4,898	986	98,635
Montana	2	907	52	9,439
Idaho	14	3,427	87	12,303
Colorado	120	28,460	667	70,660
New Mexico	22	4,550	70	8,019
Arizona	22	5,630	72	12,340
Utah	65	15,954	220	32,753
Nevada	6	1,100	5	854
Washington	300	71,677	451	70,694
Oregon	111	31,876	523	62,896

VEGETABLES PRODUCED IN 1919—Continued.

STATE.	Cababage.		Cantaloupes.	
	Acres.	Value.	Acres.	Value.
Maine	468	159,665	8	1,586
New Hampshire	255	60,155	12	2,374
Vermont	154	39,804	17	1,337
Massachusetts	2,737	633,328	119	26,018
Rhode Island	255	41,295	31	5,714
Connecticut	1,207	253,762	96	23,988
New York	30,555	4,906,249	1,091	264,007
New Jersey	4,079	618,495	4,231	371,428
Ohio	4,240	825,707	1,446	311,840
Indiana	1,953	250,186	4,182	498,244
Wisconsin	11,955	1,478,781	334	67,188
Minnesota	3,372	442,985	406	82,107
Iowa	1,562	243,493	876	87,995
Missouri	1,258	177,464	843	96,020
North Dakota	73	11,217	5	1,277
Kansas	527	75,690	789	87,118
Delaware	108	19,450	2,500	203,393
Maryland	2,442	524,683	4,065	518,119
West Virginia	859	166,076	96	13,721
North Carolina	1,181	198,393	2,130	351,543
Florida	4,501	1,139,361	1,079	117,400
Kentucky	974	160,338	792	109,774
Tennessee	1,176	175,109	977	97,318
Alabama	1,488	440,347	471	43,980
Montana	195	62,391	17	5,466
Idaho	185	56,284	94	19,504
Colorado	3,772	745,127	4,007	691,230
New Mexico	377	56,828	1,022	142,481
Arizona	163	31,128	3,300	465,739
Utah	273	58,435	240	52,743
Nevada	18	3,845	38	7,120
Oregon	984	128,111	131	25,174
Washington	1,241	237,124	512	110,220

OTHER VEGETABLES RAISED FOR SALE—Continued.

STATE.	Celery.		Cucumbers.	
	Acres.	Value.	Acres.	Value.
Maine	25	10,218	160	42,108
New Hampshire	11	5,710	76	16,459
Vermont	9	6,964	58	9,992
Massachusetts	942	570,882	1,162	351,978
Rhode Island	25	12,602	72	19,323
Connecticut	194	96,960	197	40,235
New York	3,288	1,623,684	4,840	821,621
New Jersey	944	367,527	1,995	233,475
Ohio	1,290	606,397	1,989	332,950
Indiana	139	46,394	7,878	218,033
Wisconsin	183	61,818	4,631	588,543
Minnesota	80	44,576	784	134,717
Iowa	19	6,398	419	42,605
Missouri	65	18,552	713	82,198
New Mexico	15	4,718	82	10,130
Kansas	13	4,525	142	21,697
Delaware	52	15,052	525	68,030
Maryland	64	23,730	1,235	196,715
West Virginia	15	5,424	245	32,806
North Carolina	9	1,989	652	129,942
Florida	1,992	2,321,423	3,782	1,043,771
Kentucky	15	6,754	550	60,736
Tennessee	12	3,400	167	19,638
Alabama . . . . .	...	1,112	730	101,812
Montana	8	5,940	46	11,402
Idaho	46	41,039	46	7,983
Colorado	556	307,866	1,589	238,392
New Mexico	26	9,041	19	4,028
Arizona	9	1,805	60	83,775
Utah	104	44,858	93	15,217
Nevada	1	869	2	279
Washington	159	88,291	307	51,440
Oregon	114	86,977	348	47,975

OTHER VEGETABLES RAISED FOR SALE—Continued.

STATE.	Lettuce.		Onions.	
	Acres.	Value.	Acres.	Value.
Maine	52	21,815	99	28,684
New Hampshire	26	6,885	77	18,922
Vermont	6	3,615	87	30,014
Massachusetts	673	711,998	4,411	2,299,939
Rhode Island	27	32,875	48	22,465
Connecticut	157	64,375	357	114,730
New York	3,392	1,467,950	7,500	2,804,153
New Jersey	1,123	699,864	2,513	832,235
Ohio	464	242,127	5,713	2,134,346
Indiana	149	61,321	4,191	1,087,866
Wisconsin	78	29,044	1,487	383,843
Minnesota	149	57,449	1,734	609,385
Iowa	86	33,788	1,554	600,146
Missouri	470	109,314	495	111,951
New Mexico	15	1,913	51	15,628
Kansas	99	32,403	344	79,466
Delaware	16	5,137	24	5,946
Maryland	307	87,711	407	69,660
West Virginia	53	16,167	424	87,770
North Carolina	283	112,475	302	37,932
Florida	2,644	1,420,683	154	40,986
Kentucky	74	28,183	1,783	413,392
Tennessee	54	14,725	572	86,397
Alabama	49	10,821	151	19,485
Montana	11	6,485	81	23,423
Idaho	27	15,094	131	54,714
Colorado	222	68,302	751	315,534
New Mexico	30	6,854	170	30,649
Arizona	284	72,405	71	19,130
Utah	22	6,170	175	77,166
Nevada	4	634	14	3,175
Washington	489	144,041	856	415,527
Oregon	123	35,668	853	420,193

VEGETABLES PRODUCED IN 1919—Continued.

STATE.	Peas (green).		Spinach.	
	Acres.	Value.	Acres.	Value.
Maine	385	65,827	10	1,720
New Haven	114	20,499	15	5,334
Vermont	46	8,211	1	176
Massachusetts	622	118,824	255	79,845
Rhode Island	137	13,864	14	4,176
Connecticut	290	50,044	59	15,377
New York	17,440	968,131	524	93,045
New Jersey	4,241	376,549	471	126,240
Ohio	2,777	193,531	105	13,514
Indiana	2,313	138,537	12	2,193
Wisconsin	36,742	1,860,394	17	1,730
Minnesota	148	34,223	19	4,793
Iowa	123	18,965	1	270
Missouri	192	28,104	172	17,598
New Mexico	32	3,302	...	...
Kansas	167	18,156	11	1,635
Delaware	2,145	102,958	4	427
Maryland	6,281	431,596	2,061	238,937
West Virginia	109	15,942	2	805
North Carolina	439	48,829	2	1,115
Florida	695	87,496	2	878
Kentucky	461	35,471	50	6,276
Tennessee	499	46,200	22	1,495
Alabama	422	26,660	7	670
Montana	37	5,701	7	2,036
Idaho	68	10,738	1	1,030
Colorado	741	48,123	15	2,236
New Mexico	90	9,547	25	4,649
Arizona	16	2,611	28	2,860
Utah	2,434	158,177	2	310
Nevada	4	651	...	...
Washington	498	101,666	103	21,905
Oregon	185	27,747	56	6,972

VEGETABLES PRODUCED IN 1919—Continued.

STATE.	Sweet Corn.		Tomatoes.		Watermelons.	
	Acres.	Value.	Acres.	Value.	Acres.	Value.
Maine	11,316	1,554,800	132	35,824	6	929
N. Hampshire	1,247	127,696	134	40,149	4	851
Vermont	1,123	79,073	66	17,864	6	830
Massachusetts	5,987	836,192	1,743	483,918	217	8,018
R. Island	756	75,783	223	61,819	14	1,096
Connecticut . .	3,460	397,050	1,050	289,279	35	7,930
New York	28,965	2,028,617	13,417	2,378,858	201	29,652
New Jersey . .	15,572	1,317,821	36,986	3,803,193	1,759	127,042
Ohio	27,902	1,590,479	10,870	2,154,259	1,009	141,000
Indiana	10,101	488,257	20,790	1,990,374	4,850	446,902
Wisconsin . . .	6,777	288,468	1,207	224,422	263	40,329
Minnesota . . .	4,853	250,955	730	180,470	154	23,847
Iowa	28,595	1,012,771	2,620	303,104	3,475	279,721
Missouri	1,820	117,442	10,346	1,099,618	9,249	615,696
New Mexico . .	116	8,267	39	8,976	74	5,346
Kansas	1,633	98,712	1,867	341,263	4,400	357,031
Delaware . . .	2,976	134,246	22,797	1,213,575	1,747	82,676
Maryland . . .	34,778	1,766,279	58,083	4,286,591	3,005	221,743
W. Virginia . .	1,227	105,739	2,257	301,920	466	50,971
N. Carolina . .	908	65,358	683	119,079	5,983	414,762
Florida	647	64,699	18,089	4,103,929	14,646	993,409
Kentucky . . .	1,385	77,461	3,690	378,123	1,885	219,700
Tennessee . . .	1,135	80,185	7,981	901,182	3,350	312,895
Alabama	255	17,982	1,143	132,412	6,088	318,093
Montana	240	29,814	66	26,648	43	6,656
Idaho	299	26,105	208	38,584	508	68,564
Colorado	701	67,733	2,363	346,490	846	83,247
N. Mexico . . .	91	7,272	373	39,595	491	53,064
Arizona	191	15,569	113	27,483	1,078	109,745
Utah	206	19,639	3,648	518,162	390	72,770
Nevada	17	1,946	12	3,532	26	3,814
Washington . .	1,477	163,754	863	287,222	525	54,554
Oregon	826	86,253	727	178,008	169	21,378

Approved: W. L. Austin, Chief Statistician for Agriculture.

MONTHLY CROP REPORTER.

AGGREGATE CROP ACREAGES, BY STATES.

(Crops included: Corn, wheat, oats, barley, rye, buckwheat, potatoes, sweet potatoes, tobacco, flax, rice, all hay, cotton, peanuts, kafirs, beans, broom corn, hops, cranberries.)

STATE	Acreage of Given Crops.				Acreage of All Crops, 1909	Per Cent of Given Crops to All Crops, 1909	Theoretical Acreage of All Crops		
	1920	1919	1918	1909			1920	1919	1918
Maine	1,460,000	1,431,000	1,481,000	1,539,000	1,588,065	97	1,505,000	1,475,000	1,527,000
New Hampshire	510,000	497,000	538,000	568,000	593,093	96	531,000	518,000	560,000
Vermont	1,086,000	1,082,000	1,139,000	1,138,000	1,203,795	94	1,155,000	1,151,000	1,212,000
Massachusetts	554,400	559,500	552,000	590,000	654,844	90	616,000	622,000	613,000
Rhode Island	59,000	60,000	79,000	76,000	84,207	90	66,000	67,000	88,000
Connecticut	496,400	500,000	509,000	501,000	534,846	94	528,000	532,000	541,000
New York	7,798,000	7,844,000	7,983,800	7,911,000	8,387,731	94	8,296,000	8,345,000	8,493,000
New Jersey	1,004,800	1,024,200	1,019,700	999,000	1,114,903	90	1,116,000	1,138,000	1,133,000
Pennsylvania	7,803,000	8,014,000	8,052,600	7,637,000	7,826,562	98	7,962,000	8,178,000	8,217,000
Delaware	437,000	448,000	477,000	404,000	438,522	92	475,000	487,000	518,000
Maryland	2,040,000	2,131,000	2,088,000	1,788,000	1,934,954	93	2,194,000	2,291,000	2,245,000
Virginia	4,473,000	4,676,000	4,639,000	4,073,000	4,256,226	96	4,659,000	4,871,000	4,832,000
West Virginia	2,125,000	2,156,000	2,205,600	1,799,000	1,874,382	96	2,214,000	2,246,000	2,298,000
North Carolina	7,082,400	6,996,400	7,387,500	5,419,000	5,737,037	94	7,534,000	7,443,000	7,859,000
South Carolina	6,447,100	6,559,700	6,381,900	4,810,000	5,152,845	93	6,932,000	7,053,000	6,862,000
Georgia	11,941,800	11,824,200	11,972,700	9,276,000	9,662,383	96	12,439,000	12,317,000	12,472,000
Florida	1,268,200	1,315,200	1,370,800	1,122,000	1,223,078	92	1,378,000	1,430,000	1,490,000
Ohio	11,147,000	11,578,000	11,134,000	11,153,000	11,431,610	98	11,374,000	11,814,000	11,361,000
Indiana	11,108,000	11,758,000	12,300,300	10,977,000	11,331,395	97	11,452,000	12,122,000	12,681,000
Illinois	19,314,900	20,599,900	21,235,800	19,938,000	20,273,916	98	19,709,000	21,020,000	21,669,000

Michigan	8,219,000	8,615,000	8,444,000	7,802,000	8,198,578	95	8,652,000	9,068,000	8,888,000
Wisconsin	9,278,900	9,236,900	9,036,700	8,233,000	8,555,080	96	9,666,000	9,622,000	9,413,000
Minnesota	15,317,000	15,752,000	15,738,000	14,515,000	14,731,464	99	15,472,000	15,911,000	15,897,000
Iowa	21,031,000	21,421,000	21,355,000	20,090,000	20,374,925	99	21,243,000	21,637,000	21,571,000
Missouri	14,226,400	15,045,400	14,787,250	13,925,000	14,335,588	97	14,666,000	15,511,000	15,245,000
North Dakota	16,582,000	17,472,000	18,020,000	15,728,000	15,888,756	99	16,749,000	17,648,000	18,202,000
South Dakota	14,822,000	14,825,000	14,735,000	11,916,000	12,226,722	97	15,280,000	15,284,000	15,191,000
Nebraska	18,098,000	18,820,000	18,298,000	16,984,000	17,231,205	99	18,281,000	19,010,000	18,483,000
Kansas	21,477,000	21,415,000	21,689,000	19,060,000	19,900,750	99	18,281,000	19,010,000	18,483,000
Kentucky	5,980,000	6,417,000	6,566,000	5,783,000	6,046,819	96	6,229,000	6,684,000	6,840,000
Tennessee	6,647,000	6,673,000	6,725,800	6,125,000	6,365,143	96	6,924,000	6,951,000	7,006,000
Alabama	9,678,000	9,654,600	9,573,100	6,977,000	7,205,239	97	9,977,000	9,953,000	9,869,000
Mississippi	7,842,000	7,719,300	7,894,000	5,968,000	6,158,719	97	8,085,000	7,958,000	8,138,000
Louisiana	4,588,500	4,400,400	4,530,300	3,182,000	3,586,348	89	5,099,000	4,944,000	5,090,000
Texas	25,493,000	24,622,000	23,509,000	17,414,000	18,389,092	95	26,835,000	25,918,000	24,746,000
Oklahoma	13,586,500	13,696,000	13,254,000	11,501,000	11,921,670	96	14,153,000	14,267,000	13,806,000
Arkansas	6,834,200	6,767,800	7,218,400	5,187,000	5,376,484	96	7,119,000	7,050,000	7,519,000
Montana	4,525,000	4,857,000	5,124,000	1,827,000	1,848,113	99	4,571,000	4,906,000	5,176,000
Wyoming	1,808,000	1,608,000	1,634,000	777,000	786,650	99	1,826,000	1,624,000	1,651,000
Colorado	4,649,000	4,682,000	4,369,000	2,323,000	2,614,312	89	5,224,000	5,261,000	4,909,000
New Mexico	1,337,000	1,214,000	960,000	422,000	632,769	67	1,996,000	1,812,000	1,433,000
Arizona	520,000	456,000	451,000	177,000	190,982	93	559,000	490,000	485,000
Utah	1,019,000	976,000	1,032,000	714,000	755,370	95	1,073,000	1,027,000	1,066,000
Nevada	384,000	392,000	444,000	391,000	392,387	99	388,000	396,000	448,000
Idaho	2,341,000	2,277,000	2,223,000	1,606,000	1,638,479	98	2,389,000	2,323,000	2,268,000
Washington	3,782,000	3,901,600	3,664,100	3,382,000	3,431,273	99	3,820,000	3,941,000	3,701,000
Oregon	2,760,000	2,749,000	2,706,000	2,236,000	2,281,288	98	2,816,000	2,805,000	2,761,000
California	5,530,000	5,624,000	5,805,000	4,659,000	4,924,733	95	5,821,000	5,920,000	6,111,000
United States	346,462,100	352,343,100	352,332,350	300,622,000	311,293,382	96.6	359,420,000	365,348,000	365,197,000

AMERICAN CROP YIELDS VERSUS EUROPEAN YIELDS.

European soils are naturally no better and no worse than the soils of the United States, yet in Europe some countries get a crop yield of more than double the same yields in the United States per acre, and the difference is very largely due to the difference in the heavy use of fertilizers on European farms. The following table is interesting:

COUNTRY.	Fertilizer used per cultivated acre, 1910.	Yield, bushels per acre, 1905-1913.			
		Wheat.	Rye.	Oats.	Potatoes.
	Pounds				
United States	37	14.6	16.0	29.5	95.0
France	111	20.2	16.9	30.6	130.7
Germany	207	30.0	27.4	53.6	104.8
Great Britain and Ireland..	244	33.4	29.1	43.5	211.7
Belgium	495	37.0	34.7	71.5	306.0

An examination of statistical facts will show that prior to the use of fertilizers in European countries now enjoying very large yields per acre, the average yields were little better than are found in the United States. In the case of Germany, the increase in yield has taken place in the past thirty years, and during the same period there was a corresponding increase in fertilizer consumption. The following table gives comparisons of interest:

Average yields per acre, bushels.

	United States.			Germany.		
	1888 to 1892.	1905 to 1913.	Gain.	1888 to 1892.	1905 to 1913.	Gain.
Wheat	12.8	14.6	1.8	20.2	30.9	10.7
Rye	12.9	16.0	3.1	15.8	27.4	11.6
Oats	25.3	29.5	4.2	33.5	53.6	20.1
Barley	23.5	24.8	1.3	24.8	37.2	12.4
Potatoes	73.7	95.0	21.3	130.0	204.8	74.8

The following table shows the relative increase in fertilizer consumption in the two countries of the United States and Germany during the period of time under consideration:

Tons of Fertilizer Consumed.

	United States.	Germany.
Year:		
1890	724,000	1,790,000
1900	2,795,000	3,410,000
1910	5,779,000	6,520,000
1913	6,801,000	9,454,000
Cultivated acreage 1913	320,000,000	65,000,000
Pounds fertilizer per acre, 1913.....	42	291

Germany has only one-fifth the cultivated acreage, but uses 40 per cent. more fertilizer than the entire United States. The average fertilizer consumption per acre in Germany is seven times that in the United States, and it ought not to be forgotten that the German farmer does

not use fertilizer merely to please or accommodate the German Government in respect to the need of growing large crops in Germany, but the German farmer uses fertilizer to the extent he does because it pays him a profit to do so, and a large one on his fertilizer investment.

In respect to nitrogen as a fertilizer, it should be kept in mind that more money is paid by the farmers for nitrogen than for phosphoric acid and potash together. Of the total cost of fertilizer materials, 52 per cent. is paid for nitrogen, 28 per cent. for phosphoric acid, and 20 per cent. for potash.

FARMS IN THE UNITED STATES.

Number and Location, with Comparative Figures for Decade Ago.

The United States census bureau has recently made public the recently gathered statistics covering the number and location of all the farms in the country. The table gives the number of farms by States in 1900 and 1910, and some interesting comparisons are possible.

It will be noted that the percentage of increase in number of farms was much greater during the decade of 1900-10 than from 1910 to 1920. The reason for this is that by 1910 most of the land suitable for farms had been homesteaded, and the new States largely settled.

During the decade of 1910-20, the largest increases in numbers have been made in those States where irrigation development has been most active.

Decreases in numbers of farms in the agricultural States are largely accounted for by the fact that modern machinery makes it possible to handle more land with the same man power, and farmers frequently buy out their neighbors, consolidating two or more farms into one, thus increasing the size of the farm unit, but reducing the total number.

A "farm" for census purposes is all the land which is directly farmed by one person, either by his own labor, alone, or with the assistance of his household, or hired employees. When a land owner has one or more tenants or managers, the land operated by each is counted a farm.

NUMBER OF FARMS BY STATES: 1920, 1910, AND 1900.

STATE.	Number of Farms.		
	1920.	1910.	1900.
United States total	6,449,998	6,361,502	5,737,372
Alabama	256,023	262,901	223,220
Arizona	10,816	9,227	5,809
Arkansas	232,602	214,678	178,694
California	117,690	88,197	72,542
Colorado	59,991	46,170	24,700
Connecticut	22,655	26,815	26,948
Delaware	10,128	10,836	9,687
District of Columbia	203	217	269
Florida	54,006	50,016	40,814
Georgia	310,737	291,027	224,691
Idaho	42,109	30,807	17,471
Illinois	237,153	251,872	264,151
Indiana	205,124	215,485	221,897
Iowa	214,312	217,044	228,622
Kansas	165,287	177,841	173,098
Kentucky	270,676	259,185	234,667
Louisiana	135,455	120,546	115,969
Maine	48,228	60,016	59,299
Maryland	47,908	48,923	46,012
Massachusetts	31,982	36,917	37,715
Michigan	196,647	206,960	103,261
Minnesota	178,588	156,137	154,659
Mississippi	272,437	274,382	220,803
Missouri	263,124	277,244	284,886
Montana	57,441	26,214	13,370
Nebraska	126,309	129,678	121,525
Nevada	3,164	2,689	2,184
New Hampshire	20,523	27,053	29,324
New Jersey	29,672	33,487	34,650
New Mexico	29,841	35,676	12,311
New York	193,060	215,597	226,720
North Carolina	269,740	253,725	224,637
North Dakota	77,693	74,360	45,332
Ohio	256,699	272,045	276,719
Oklahoma	191,731	190,192	108,000
Oregon	50,188	45,502	35,837
Pennsylvania	202,256	219,295	224,248
Rhode Island	4,084	5,202	5,498
South Carolina	192,664	170,134	155,355
South Dakota	74,564	77,644	52,622
Tennessee	252,691	246,012	224,623
Texas	435,600	417,770	352,190
Utah	25,664	21,676	19,387
Vermont	29,012	32,709	33,104
Virginia	186,011	184,018	167,886
Washington	66,288	56,197	33,202
West Virginia	87,289	96,685	92,874
Wisconsin	189,196	177,127	169,795
Wyoming	15,611	10,987	6,095

NUMBER OF FARMS, BY STATES: 1920, 1910 AND 1900—Continued.

	Increase			
	1910-1920.		1900-1910.	
	Number.	Per cent.	Number.	Per cent.
United States total	88,496	1.4	624,130	10.9
Alabama	-6,878	-2.6	39,681	17.8
Arizona	1,589	17.2	3,418	58.8
Arkansas	17,924	8.3	35,984	20.1
California	29,493	33.4	15,655	21.6
Colorado	13,821	29.9	21,470	86.9
Connecticut	-4,160	-15.5	-133	-0.5
Delaware	-708	-6.5	1,149	11.9
District of Columbia	-14	-6.5	-52	-19.3
Florida	3,990	8.0	9,202	21.5
Georgia	19,710	6.8	66,336	29.5
Idaho	11,302	36.7	13,336	76.3
Illinois	-14,719	-5.8	-12,279	-4.6
Indiana	-10,361	-4.8	-6,412	-2.9
Iowa	-3,732	-1.7	-11,578	-5.1
Kansas	-12,554	-7.1	4,743	2.7
Kentucky	11,491	4.4	24,518	10.4
Louisiana	14,909	12.4	4,577	3.9
Maine	-11,788	-19.6	717	1.2
Maryland	-7,015	-2.1	2,911	6.3
Massachusetts	-4,935	-13.4	-798	-2.1
Michigan	-10,313	-5.0	3,699	1.8
Minnesota	22,451	14.4	1,478	1.0
Mississippi	-1,945	-0.7	53,579	24.3
Missouri	-14,120	-5.1	-7,642	-2.7
Montana	31,227	119.1	12,844	96.1
Nebraska	-3,369	-2.6	8,153	6.7
Nevada	475	17.7	505	23.1
New Hampshire	-6,530	-24.1	-2,271	-7.7
New Jersey	-3,815	-11.4	-1,163	-3.4
New Mexico	-5,835	-16.4	23,365	189.8
New York	-22,537	-10.5	-11,123	-4.9
North Carolina	16,015	6.3	29,088	12.9
North Dakota	3,333	4.5	29,018	64.0
Ohio	-15,346	-5.6	-4,674	-1.7
Oklahoma	1,539	0.8	82,192	76.1
Oregon	4,686	10.3	9,665	27.0
Pennsylvania	-17,039	-7.8	-4,953	-2.2
Rhode Island	-1,208	-22.8	-206	-3.7
South Carolina	16,230	9.2	21,079	13.6
South Dakota	-3,080	-4.0	25,022	47.6
Tennessee	6,679	2.7	21,389	9.5
Texas	17,896	4.3	65,580	18.6
Utah	3,988	18.4	2,289	11.8
Vermont	-3,637	-11.1	-395	-1.2
Virginia	1,993	1.1	16,132	9.6
Washington	10,096	18.0	22,990	69.2
West Virginia	-9,396	-9.7	3,811	4.1
Wisconsin	12,069	6.8	7,332	4.3
Wyoming	4,624	42.1	4,892	80.3

†A minus sign. —Denotes decrease.

†Increase.

OVER HALF THE VALUE OF OUR ENORMOUS INCREASE IN IMPORTS FOR 1920 WAS IN FOODSTUFFS

(*Manufacturers' Record*, Feb. 10, 1921).

The total value of the 1920 imports amounted to \$5,279,391,364, an increase of \$1,375,026,432, or 35 per cent. compared with \$3,904,364,932, the value of the total imports of 1919. While our imports were increased by \$1,375,000,000 our exports in 1920 increased over 1919 only \$307,974,509.

The total value of last year's exports was \$8,228,400,499, a gain of \$307,974,509 over the 1919 export value. In 1919 the excess in value of exports over imports amounted to \$4,016,061,058, while last year the value of our exports was but \$2,949,009,135 greater than the value of imports.

A significant factor in the trend of our foreign commerce is the great increase in the importations of food and feed stuffs and the decreased exports of these products.

In 1920 the total value of importations of foodstuffs was \$1,815,780,438, compared with \$1,101,108,626 in 1919, an increase in imports of \$714,671,812, or 64 per cent.

The United States exported foodstuffs in 1920 valued at \$2,034,934,934, compared with the \$2,640,978,901 exported in 1919, a decrease of \$606,043,967, or 22 per cent. Thus it will be seen that while the value of our foodstuffs imports in 1920 increased by 64 per cent over 1919, our food exports during this period decreased 22 per cent.

The Department of Commerce gives the imports and exports by great groups for the 12 months ended December, 1920, as follows:

Imports.	1920.	1919.
Crude materials for use in manufacturing.	\$1,752,876,383	\$1,674,541,857
Foodstuffs in crude condition and food animals	577,628,024	545,300,441
Foodstuffs partly or wholly manufactured.	1,238,152,414	555,808,185
Manufactures for further use in manufacturing	802,024,195	608,996,213
Manufactures ready for consumption.	877,123,247	493,202,962
Miscellaneous	31,593,948	26,515,274
Total Imports	\$5,279,398,211	\$3,994,364,932

Exports.

Crude materials for use in manufacturing	\$1,870,827,423	\$1,610,135,380
Foodstuffs in crude condition and food animals	917,974,255	678,363,413
Foodstuffs partly or wholly manufactured	1,116,960,679	1,962,615,488
Manufactures for further use in manufacturing	958,910,7770	922,245,741
Manufactures ready for consumption	3,204,382,199	2,563,504,756
Miscellaneous	11,763,129	12,950,778
Total domestic exports	\$8,080,818,455	\$7,749,815,553
Foreign merchandise exported	147,941,293	170,610,434
Total exports	\$8,228,759,748	\$7,920,425,990

The total values of merchandise imported from and exported to each of the principal countries during December and the 12 months ended December, 1920, compared with corresponding periods of the preceding year, according to the Bureau of Foreign and Domestic Commerce, was as follows:

Imports from Grand Divisions—	Twelve Months Ended December,	
	1920.	1919.
Europe	\$1,227,842,145	\$ 750,528,389
North America	1,663,451,064	1,157,773,965
South America	761,053,871	687,525,388
Asia	1,283,800,699	1,041,441,129
Oceania	192,965,238	154,905,415
Africa	150,285,194	112,187,646
Total	\$5,279,398,211	\$3,904,364,932

Principal countries—

Belgium	\$ 47,443,156	\$ 7,700,100
Denmark	20,573,746	6,201,750
France	165,654,703	123,819,225
Germany	88,836,280	10,808,141
Greece	20,144,612	28,599,669
Italy	75,357,579	59,060,065
Netherlands	95,226,976	75,506,503
Norway	21,627,230	7,371,249
Spain	42,513,051	49,494,954
Sweden	31,612,153	13,722,931
Switzerland	54,556,098	27,687,818
United Kingdom	513,846,804	309,189,265
Canada	611,788,418	494,696,548
Central America	66,675,407	43,149,859
Mexico	180,191,075	148,926,376
Cuba	721,695,905	418,610,263
Argentina	207,776,868	199,158,401
Brazil	227,587,594	233,570,620
Chile	120,515,599	82,442,364
Uruguay	33,780,647	50,483,828
China	192,705,982	154,684,974
British India	178,073,650	140,081,000
Dutch East Indies	167,415,935	78,743,591
Japan	414,654,623	409,853,213
Australia	45,982,498	58,157,718
Philippine Islands	112,950,779	66,289,336
British South Africa	20,616,766	38,815,763
Egypt	97,015,056	39,628,651

Exports to
Grand Divisions—

Europe	\$4,466,655,197	\$5,187,666,863
North America	1,929,136,576	1,295,791,866
South America	623,910,163	441,747,728
Asia	771,954,431	701,164,787
Oceania	271,441,610	196,136,861
Africa	165,661,771	97,918,885
Total	\$8,228,759,748	\$7,920,425,990

Principal Countries—

Belgium	\$ 282,479,776	\$ 377,883,308
Denmark	85,074,449	163,957,478
France	676,193,257	893,359,996
Germany	311,437,377	92,761,314
Greece	39,462,042	42,798,610
Italy	371,767,274	442,676,842
Netherlands	246,451,597	255,098,740
Norway	94,661,767	135,134,594
Spain	151,440,032	102,819,699
Sweden	114,780,361	133,069,131
Switzerland	44,909,719	76,145,554
United Kingdom	1,825,029,947	2,278,557,524
Canada	971,854,093	734,244,819
Central America	86,475,784	55,652,518
Mexico	207,854,197	131,455,101
Cuba	515,082,549	278,391,222
Argentina	213,725,984	155,899,299
Brazil	156,740,365	114,696,309
Chile	55,310,465	53,121,087
Uruguay	33,720,550	31,419,669
China	145,736,732	105,539,583
British India	99,857,517	67,505,528
Dutch East Indies	59,078,192	46,576,489
Japan	377,961,896	366,364,403
Australia	119,912,558	95,085,059
Philippine Islands	99,830,055	70,551,953
British South Africa	60,939,159	44,042,000
Egypt	38,123,387	15,075,775

*AMORTIZATION PLAN FOR LOANS ON REAL ESTATE.

Table showing how a debt of \$1,000 is discharged by 139 monthly payments of \$10.00 each. The debtor pays 6 per cent. simple interest on the amount remaining due each month.

(*All Federal Farm Loan debts are paid off by the Amortization plan.)

	Monthly Payment.	Interest	Applied on Principal	Balance Due
1	\$ 10.00	\$ 5.00	\$ 5.00	\$ 995.00
2	10.00	4.98	5.02	989.98
3	10.00	4.95	5.05	984.93
4	10.00	4.92	5.08	979.85
5	10.00	4.90	5.10	974.75
6	10.00	4.87	5.13	969.62
7	10.00	4.85	5.15	964.47
8	10.00	4.82	5.18	959.29
9	10.00	4.80	5.20	954.09
10	10.00	4.77	5.23	948.86
11	10.00	4.74	5.26	943.60
12	10.00	4.72	5.28	938.32
13	10.00	4.69	5.31	933.01
14	10.00	4.67	5.33	927.68
15	10.00	4.64	5.36	922.32
16	10.00	4.61	5.39	916.93
17	10.00	4.58	5.42	911.51
18	10.00	4.56	5.44	906.07
19	10.00	4.53	5.47	900.60
20	10.00	4.50	5.50	895.10
21	10.00	4.48	5.52	889.58
22	10.00	4.45	5.55	884.03
23	10.00	4.42	5.58	878.45

	Monthly Payment.	Interes	Applied on Principal	Balance Due
24	10.00	4.39	5.61	872.84
25	10.00	4.38	5.64	867.20
26	10.00	4.34	5.66	861.54
27	10.00	4.31	5.69	855.85
28	10.00	4.28	5.72	850.13
29	10.00	4.25	5.75	844.38
30	10.00	4.22	5.78	838.60
31	10.00	4.19	5.81	832.79
32	10.00	4.16	5.84	826.95
33	10.00	4.13	5.87	821.08
34	10.00	4.11	5.89	815.19
35	10.00	4.08	5.92	809.27
36	10.00	4.05	5.95	803.32
37	10.00	4.02	5.98	797.34
38	10.00	3.99	6.01	791.33
39	10.00	3.96	6.04	785.29
40	10.00	3.93	6.07	779.22
41	10.00	3.90	6.10	773.12
42	10.00	3.87	6.13	766.99
43	10.00	3.83	6.17	760.82
44	10.00	3.80	6.20	754.62
45	10.00	3.77	6.23	748.39
46	10.00	3.74	6.26	742.13
47	10.00	3.71	6.29	735.84
48	10.00	3.68	6.32	729.52
49	10.00	3.65	6.35	723.17
50	10.00	3.62	6.38	716.79
51	10.00	3.58	6.42	710.37
52	10.00	3.55	6.45	703.92
53	10.00	3.52	6.48	697.44
54	10.00	3.49	6.51	690.93
55	10.00	3.45	6.55	684.38
56	10.00	3.42	6.58	677.80
57	10.00	3.39	6.61	671.19
58	10.00	3.36	6.64	664.55
59	10.00	3.32	6.68	657.87
60	10.00	3.29	6.71	651.16
61	10.00	3.26	6.74	644.42
62	10.00	3.22	6.78	637.64
63	10.00	3.19	6.81	630.83
64	10.00	3.15	6.85	623.98
65	10.00	3.12	6.88	617.10
66	10.00	3.09	6.91	610.19
67	10.00	3.05	6.95	603.24
68	10.00	3.02	6.98	596.26
69	10.00	2.98	7.02	589.24
70	10.00	2.95	7.05	582.19
71	10.00	2.91	7.09	575.10
72	10.00	2.88	7.12	567.98
73	10.00	2.84	7.16	560.82
74	10.00	2.80	7.20	553.62
75	10.00	2.77	7.23	546.39
76	10.00	2.73	7.27	539.12
77	10.00	2.70	7.30	531.82
78	10.00	2.66	7.34	524.48
79	10.00	2.62	7.38	517.10
80	10.00	2.59	7.41	509.69
81	10.00	2.55	7.45	502.24
82	10.00	2.51	7.49	494.75
83	10.00	2.47	7.53	487.22
84	10.00	2.44	7.56	479.66
85	10.00	2.40	7.60	472.06
86	10.00	2.36	7.64	464.42
87	10.00	2.32	7.68	456.74
88	10.00	2.28	7.72	449.02
89	10.00	2.25	7.75	441.27
90	10.00	2.21	7.79	433.48
91	10.00	2.17	7.83	425.65
92	10.00	2.13	7.87	417.78
93	10.00	2.09	7.91	409.87
94	10.00	2.05	7.95	401.92
95	10.00	2.01	7.99	393.93

	Monthly Payment.	Interest	Applied on Principal	Balance Due
96	10.00	1.97	8.03	385.90
97	10.00	1.93	8.07	377.83
98	10.00	1.89	8.11	369.72
99	10.00	1.85	8.15	361.57
100	10.00	1.81	8.19	352.38
101	10.00	1.76	8.24	345.14
102	10.00	1.73	8.27	336.87
103	10.00	1.68	8.32	328.55
104	10.00	1.64	8.36	320.19
105	10.00	1.60	8.40	311.79
106	10.00	1.56	8.44	303.35
107	10.00	1.52	8.48	294.87
108	10.00	1.47	8.53	286.34
109	10.00	1.43	8.57	277.77
110	10.00	1.39	8.61	269.16
111	10.00	1.35	8.65	260.51
112	10.00	1.30	8.70	251.81
113	10.00	1.26	8.74	243.07
114	10.00	1.22	8.78	234.29
115	10.00	1.17	8.83	225.46
116	10.00	1.13	8.87	216.59
117	10.00	1.08	8.92	207.67
118	10.00	1.04	8.96	198.71
119	10.00	.99	9.01	189.70
120	10.00	.95	9.05	180.65
121	10.00	.90	9.10	171.55
122	10.00	.86	9.14	162.41
123	10.00	.81	9.19	153.22
124	10.00	.77	9.23	143.99
125	10.00	.72	9.28	134.71
126	10.00	.67	9.33	125.38
127	10.00	.63	9.37	116.01
128	10.00	.58	9.42	106.59
129	10.00	.53	9.47	97.12
130	10.00	.49	9.51	87.61
131	10.00	.44	9.56	78.05
132	10.00	.39	9.61	68.44
133	10.00	.34	9.66	58.78
134	10.00	.29	9.71	49.07
135	10.00	.25	9.75	39.32
136	10.00	.20	9.80	29.52
137	10.00	.15	9.85	19.67
138	10.00	.10	9.90	9.77
139	10.00	.23	9.77	.00
Total paid	\$1,390.00	\$390.00	\$1,000.00	

This plan is applied to any loan by the following rule: The borrower makes 139 monthly payments, each of an amount equal to 1 per cent. of the original amount of the loan.

FEDERAL FARM LOAN BANKS.

During three years the Federal Farm Loan Banks loaned \$346,616,041 to 125,003 farmers, and twenty-eight Joint Stock Land Banks loaned \$79,111,532 to 8,315 farmers. Thus 133,318 farmers were enabled to mobilize their credit and secure cheap money on long-time loans from March 27, 1917, to April 30, 1920. The rates were 5, 5 1-2 and 6 per cent., running from five to thirty-five years, payable by the amortisation plan.

The Federal Land Banks had approved applications for loans on hand for \$41,966,961 to 16,390 farmers when the operation of the system was halted by a suit instigated by the Farm Mortgage Breakers' Association of America against the constitutionality of certain features of the law. The contention being that Congress had no power to establish government banks and that the tax-exemption feature of the Farm Loan Bonds is unconstitutional.

The case was argued in Kansas City, Mo., before the U. S. District Court and dismissed. An appeal was taken to the United States Supreme Court and argued there in January, 1920; in April a new hearing was ordered, and a decision reached February 28, 1921, which held the Farm Loan Act valid.

The Federal Land Bank of Wichita, Kas., and the First Joint Land Bank, of Chicago, filed petitions asking for permission to intervene and were made defendant parties on behalf of all other federal land banks and joint stock land banks.

The Federal Government entered the case as an *amicus curiae* because of the public interest involved.

The money which farmers borrow through this system is not government money, but is secured by the sale of land-mortgage bonds in the open market. Pending the decision of the court there was a doubt about the bonds being exempt from taxes, thus rendering the sale of bonds at the same rates secured before the filing of the suit impossible, and the sale was discontinued. Immediately interested rates were raised by private money lenders and bankers from 1 to 4 per cent. on farm loans.

Recognizing the need of capital at low rates to operate farming Congress passed a joint resolution and the President signed it on May 26, 1920, authorizing the

Secretary of the Treasury to buy Federal Farm Loan bonds to provide funds for making loans approved by the banks up to March, 1920. This Act provided between twenty-five and thirty million dollars, which was hoped would tide over till the decision of the Supreme Court.

The banks are now open for business, and this service will be limited only by the market for land bank bonds at the limited rate of interest.

9,630 MILES OF ROAD TO GET FEDERAL AID

By T. H. MacDonald, Chief, Bureau of Public Roads,
United States Department of Agriculture.

Federal aid for the construction of 9,630 miles of national highways has been approved by the United States Department of Agriculture. Up to September 30, 1920, approval has been given for 855 projects, which form links in one or the other of the 24 marked trails which have been laid out by private associations to cross the country from East to West and North to South.

The mileage which will be constructed with Federal aid on each of the several trails is shown in the following table:

Name of Highway.	Length Federal aid ap- proved projects.
	Miles.
Dixie Highway	895
Ozark Trails	294
Yellowstone Trail	455
Bankhead Highway	963
Meridian Highway	677
National Old Trails	826
King of Trails	474
National Parks Highway	647
Theodore Roosevelt International Highway..	425
Jefferson Highway	604
Lincoln Highway	766
Old Spanish Trail	516
Mississippi Valley Highway	237
Dixie Overland Highway	259
Jackson Highway	161
Pacific Highway	183
Roosevelt National Highway	314
Colorado to Gulf	22
Pikes Peak Ocean to Ocean	319
Atlantic Highway	140
Miscellaneous	452
Total	9,630

The extent to which Federal aid has been applied to the trails varies in the different States. Naturally, the Western States are using much more of their Federal apportionment in developing roads of this character than the Eastern States. This is due to the fact that the routes in the Eastern States already had been improved to a large extent before the roads were selected by the pathfinders. This was not true in the West, where long stretches of the selected roads were still in an unimproved condition when they were designated.

NEVADA LEADS IN USE OF FEDERAL FUNDS.

Nevada leads in its use of Federal funds on roads of this character. Eighty-three per cent. of its entire mileage of approved Federal aid roads lies on one or the other of the trails which cross the States. On these roads Nevada will spend 90 per cent. of the Federal money which has been granted to her.

Indiana is a close second, with 80 per cent of its entire Federal aid mileage and 83 per cent. of its money aid applied to the construction of the trails; and Oklahoma, with 76 per cent. of its mileage and 81 per cent. of its Federal funds, is not far behind.

Florida takes the lead in the percentage of its funds which will be used for trail building, with 94 per cent. of its Federal allotments so applied; but this amount will be spent for only 56 per cent. of the mileage which has been approved in the State.

In addition to the above, the State of Illinois, Kansas, Montana, New Mexico, Utah and Washington are using 50 per cent. or more of their Federal money for the upbuilding of the trails.

**STATUS OF FEDERAL AID FUNDS FOR ROADS COMPILED FROM REPORTS OF STATE
HIGHWAY DEPARTMENTS, JANUARY 15, 1921.**

STATE.	Amount of Federal aid available for contracts Dec. 31, 1920.	Federal aid funds which under contract since Dec. 31, 1920.	Federal aid funds which will be put under contract by Apr. 1, 1921.	Amount of Federal aid for new contracts. Apr. 1, 1921.	Mileage at \$20,000 per mile.	Date when all Federal aid funds will be absorbed by contracts.	Federal aid apportionment under Sells bill, 1921.
Alabama	\$4,146,582.58	\$141,858.64	\$2,000,000.00	\$2,004,723.94	100	July 15, 1921	\$2,104,883.51
Arizona	1,530,892.69	650,679.00	500,000.00	380,213.69	19	July 1, 1921	1,373,644.16
Arkansas	2,152,310.47		84,191.47	2,067,619.00	103	Apr. 1, 1921	1,685,178.09
California	4,037,034.57		3,137,034.57	1,800,000.00	90	July 1, 1922	3,054,675.51
Colorado	2,965,890.14	32,000.00	1,755,759.17	1,178,130.97	85	Oct. 1, 1921	1,755,759.17
Connecticut	864,901.70			864,901.70	43	July 1, 1922	613,349.43
Delaware	162,674.83	162,674.83		(*)	None	(†)	162,674.81
Florida	915,918.48	915,918.48		(*)	None	(†)	1,147,447.92
Georgia	1,531,287.62	1,531,287.62		(*)	None	(†)	2,697,150.96
Idaho	391,250.86	319,250.86		(*)	None	(†)	1,226,049.93
Illinois	1,136,328.97	962,473.97	173,855.00	(*)	None	(†)	4,365,067.91
Indiana	4,715,924.61		2,500,000.00	2,215,924.61	—12	July 1, 1922	2,687,053.27
Iowa	2,140,009.14	473,200.00	1,030,000.00	636,809.14	—32	Dec. 31, 1921	2,881,328.74
Kansas	3,602,611.07	828,282.00	500,000.00	2,274,329.07	113	Dec. 31, 1921	2,871,244.62
Kentucky	2,979,384.78		1,500,000.00	1,479,384.79	—74	Dec. 31, 1921	1,951,755.43
Louisiana	109,501.57		109,501.57	(*)	None	(†)	1,362,231.13
Maine	1,160,686.57			1,160,686.57	58	June 30, 1921	960,230.16
Maryland	521,363.07		521,363.07	(*)	None	(†)	866,998.61
Massachusetts	2,210,243.09	121,416.30	156,360.00	1,932,466.79	96	Oct. 1, 1921	1,472,788.83
Michigan	3,651,657.55	294,729.00	1,500,000.00	1,856,928.55	—93	Mar. 1, 1922	2,891,667.97
Minnesota	1,063,203.02		359,109.23	704,093.79	30	May 15, 1921	2,842,089.33
Mississippi	3,139,812.29	160,000.00	300,000.00	2,679,812.29	—134	Dec. 31, 1921	1,807,557.17
Missouri	6,318,478.71		513,810.00	5,804,668.71	290		3,387,899.60
Montana	2,441,366.31	356,100.00	335,000.00	1,753,266.31	87	Dec. 31, 1921	2,008,990.13
Nebraska	2,611,635.66			2,611,635.66	130	Dec. 31, 1922	2,133,741.08
Nevada	2,301,807.18		200,000.00	2,101,807.18	105	(†)	1,276,344.43
New Hampshire	233,261.99		8,500.00	224,761.99	11	Oct. 1, 1921	414,838.93
New Jersey	1,818,272.02	346,640.00		1,471,632.02	73	June 30, 1922	1,187,556.45
New Mexico	2,514,643.61		330,000.00	2,184,643.61	109	(†)	1,598,467.85
New York	12,801,615.67		1,000,000.00	11,801,615.67	590		4,971,893.11
North Carolina	1,423,894.68	212,000.00	310,000.00	901,894.68	45	July 1, 1921	2,279,053.80

**STATUS OF FEDERAL AID FUNDS FOR ROADS COMPILED FROM REPORTS OF STATE
HIGHWAY DEPARTMENTS, JANUARY 15, 1921.**

STATE.	Amount of Federal aid available for contracts Dec. 31, 1920.	Federal aid funds which under contract since Dec. 31, 1920.	Federal aid funds which will be put under contract by Apr. 1, 1921.	Amount of Federal aid for new contracts, Apr. 1, 1921.	Mileage at \$20,000 per mile.	Date when all Federal aid funds will be absorbed by contracts.	Federal aid apportionment under Sells bill, 1921.
North Dakota	2,587,555.70		1,125,000.00	1,462,555.70	73		1,536,217.80
Ohio	5,142,965.71		1,000,000.00	4,142,965.71	207	July 1, 1921	3,706,246.81
Oklahoma	3,955,464.60						2,302,478.33
Oregon	411,717.26	42,000.00	100,000.00	269,717.26	13	May 1, 1921	1,576,152.03
Pennsylvania	1,830,291.29	397,291.29		4,433,000.00	71		4,591,946.05
Rhode Island	191,085.13	100,000.00	91,085.13	(*)	None	(†)	233,256.87
South Carolina	2,273,920.50	515,767.05	236,247.70	1,521,905.75	76	July 1, 1922	1,436,019.04
South Dakota	2,181,729.04	200,000.00	700,000.00	1,281,729.04	64	Dec. 31, 1921	1,615,779.44
Tennessee	2,520,505.98	476,366.00	550,000.00	1,494,139.98	75	July 1, 1921	2,261,913.90
Texas	7,798,589.77	2,059,453.90	2,251,015.77	3,488,120.10	173	June 1, 1921	5,861,598.46
Utah	1,124,861.38	163,031.13	546,272.41	414,954.29	20		1,129,575.66
Vermont	743,181.73		500,000.00	243,181.73	12	Oct. 1, 1921	450,077.09
Virginia	2,775,393.28	91,000.00	1,000,000.00	1,684,393.28	84	Dec. 31, 1921	1,977,673.83
Washington	108,257.83	48,257.83	60,000.00	(*)	None	(†)	1,444,877.79
West Virginia	18,569.45	16,569.45		(*)	None	(†)	1,060,152.77
Wisconsin	4,094,599.67	75,000.00	750,000.00	3,269,599.67	84	Dec. 31, 1922	2,544,945.35
Wyoming	808,249.17		500,000.00	308,249.17	15	July 1, 1921	1,233,715.84
Total	\$117,059,370.00						

(*) All contracted.

(†) Already absorbed.

(‡) January 1, 1923, unless ratio of co-operation is changed.

The above statement shows that there are 10 States which have no Federal funds whatsoever for additional contracts. There are also 25 States which have Federal funds to contract only from 11 to 100 miles of road, at \$20,000 per mile. Reports of contracts made since December 31, 1920, have not been received from Oklahoma.

CLIMATOLOGICAL DATA, FLORIDA SECTION**FLORIDA SECTION***Alexander J. Mitchell, Meteorologist*

VOL. XXIV. JACKSONVILLE, FLORIDA, ANNUAL 1920. No. 13

GENERAL SUMMARY

The temperature averaged slightly below the normal, and extremes were well within the record of previous years. A noteworthy feature of the year's weather was the cool wave that set in over the western division on the night of September 30th, following the tropical disturbance that moved northeastward over the northern counties on September 29th-30th. Midnight temperatures of the 30th were, probably, the lowest of record for the date and month, as October 1st gave record temperatures over the section with slight frost damage in Jefferson County. The year was wetter than usual, the total rainfall approximating the figures of 1919. Seasonally, the spring was wet, the summer was moderate, or slightly drier than usual, and the winter gave a slight excess in rainfall. February and April were the wettest months, and March and October the driest; normally, April and November are the driest months of the year.

The weather, as influencing the initial activities of the farmer and having to do with the growth and maturity of his crops, was rather exceptional. The rains of February, April, and May rendered the situation seemingly hopeless. Preparation of the soil was unsatisfactory, and planting and germination were delayed to such an extent that a large acreage was abandoned. Fortunately, however, the summer months were unusually propitious, the rainfall being moderate, or less than usual, making possible a rapid and satisfactory cultivation of corn, cotton, peanuts, tobacco, and melons, although the last named crop was not so good as usual; and the cotton crop was decidedly short due, however, to reduced acreage. Citrus fruits were favorably affected by the year's weather, and young groves made a good growth.

The year was singularly abnormal in regard to certain leading factors. April and November, usually the driest months, were wetter than the normal, April being the wettest of the year with an excess of more than 4 inches. February, generally warmer than either January or December, was colder than either; and June, instead of July and August, gave the highest maximum temperature. The rainfall for the year exceeded that of 1919 by only .44 of an inch, the closest approximation of any two years since 1892. The wet February, April, and May portended unusual crop deficiencies, but the reactions during the summer resulted in a marked change in agricultural prospects.

THE WEATHER BY MONTHS.

JANUARY.—The month was warmer than usual, although sharp frosts occurred as far south as Miami during the first week, doing some damage to truck; there was early reaction to normal temperature. The rainfall was below the normal, except during last week, when it was heavy to excessive over all divisions, delaying farm work and necessitating much replanting.

FEBRUARY.—Cold and wet were the average features of the month. The rainstorm of January extended into the current month, doing much damage to the potato crop over the northeastern coast counties, where the 24-hour rainfall ranged from 4 to 9 inches at some stations. The damage to highways, city and county property, approximated \$75,000. Much replanting of crops was necessary, and farm work was delayed. Frost did some damage to truck. The planting of corn and melons was backward. Citrus groves were in good condition. The greatest monthly rainfall was 21.50 inches, which approximates the record.

MARCH.—It was one of the coldest of record. It opened with an anti-cyclone over the West Gulf States, which carried frost to the south of Miami on the 2d, breaking records in the southern division since 1892. Frosts occurred on subsequent dates, being locally damaging in the several divisions. There was much sunshine, which enabled the farmer to overcome previous delays. Corn, melons, and truck suffered, however, from cold nights, and growth

was slow. A trace of snow fell at Jacksonville on the 2d and Pensacola on the 8th.

APRIL.—Normally one of the driest months, the current April was the wettest since 1892, the excess exceeding four inches. In addition to the wet periods there were low temperatures, especially on the 6th, when frost damaged truck in the southern division. Corn, cotton, peanuts, and truck made slow growth, owing to cool nights and wet soil.

May.—Frequent showers featured May, the rainfall averaging above the normal. It was, also, cooler than usual for the month. While more favorable than April for the seeding, germination, and growth of corn, melons, peanuts, cotton, cane, citrus fruits, and truck, there was much wet soil which, together with low night temperatures during the forepart of the month, resulted in delayed work and backward growth.

JUNE.—The month was cool and drier than the normal. The rainy periods were from the 1st to 9th, and from the 20th to 26th. The intervening periods of fair weather were favorable for warm work and crop development. Some late corn was planted. Cotton, cane, peanuts, and truck were generally satisfactory. Citrus fruits made splendid progress. The last of the Irish potato crop was shipped. The boll weevil appeared in some cotton plants. Some early corn and melons were in market.

JULY.—Moderate temperatures and frequent showers featured July's weather, although the rainfall was less than usual. Late corn did well; some early planted matured in the southern division. Cotton suffered from rust, shedding, and the weevil, but cane, peanuts, velvet beans, sweet potatoes, and citrus fruits advanced nicely. Melons were quite plentiful in market.

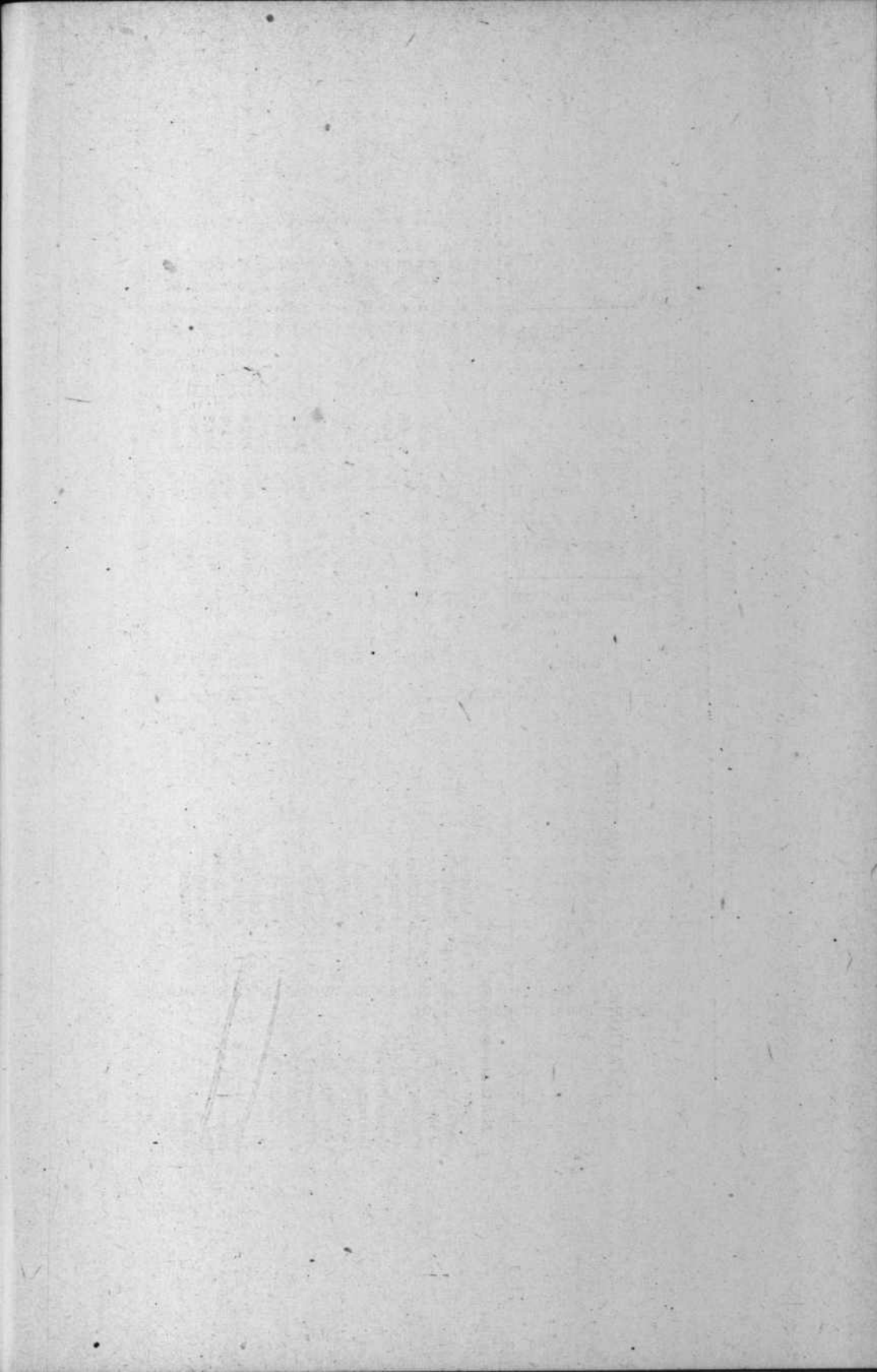
AUGUST.—Moderate rainfall, locally insufficient in some localities, and nearly normal temperatures, favored the growth of maturing of corn, cotton, cane, peanuts, sweet potatoes, and citrus fruits. Cotton opened readily on high lands, and picking was active, except that showers delayed the work to some extent. The harvesting of early corn began in the southern division.

SEPTEMBER.—The month was moderately warm and much wetter than usual, and the harvesting of corn, cotton, and hay was delayed thereby, but cane, sweet potatoes, and citrus fruits improved during the month. Some truck, fruits, cane, and cotton suffered from heavy rains and high wind on the 28th-30th, incident to the passing of a moderate storm from the Gulf over the northern portion of the section. Decidedly cooler weather set in over the northwestern counties during the 30th.

OCTOBER.—An energetic cool wave overspread the section on the 1st, and light, local frosts formed in the interior of the extreme northern counties on that date. The month was cooler than the normal, with a general deficiency in rainfall, which was very favorable for the harvesting of peanuts, cotton, sweet potatoes, and citrus fruits. Rain was needed, however, for truck. Frost occurred during the 1st and 3rd decades.

NOVEMBER.—The month was cool and comparatively wet, the latter condition being unfavorable for citrus fruits. Beans were shipped, and cabbage, celery and lettuce did very well, although some low lands were rather wet at the close of the month. The coldest weather occurred during the second decade, frost forming in the central division, and freezing in the interior of the northern and western counties. The planting of oats continued during the month.

DECEMBER.—The frost line was pushed into the southern division by the cold wave of the 17th, and beans, strawberries, and other truck suffered from local frosts. The low temperature was beneficial, however, to citrus fruits. The planting of oats was delayed in some localities by droughty conditions, but the heavy rains during the last week were sufficient for all needs; in fact, low lands were inundated in some instances. Shipments of citrus fruits were heavy, and ranges were in fair condition during most of the month.



CLIMATOLOGICAL DATA FOR THE YEAR 1920.

STATIONS.	COUNTIES	Elevation, feet.	TEMPERATURE IN DEGREES FAHRENHEIT					
			Length of Record, years.	Annual Mean.	Highest.	Date.	Lowest.	Date.
Northern Division.								
Archer	Alachua	92	35	.....	.....	.....	.....	.....
Carrabelle	Franklin	10	22	.....	99	June 14	25	Jan. 5
Cedar Keys	Levy	20	32	69.5	96	Sept. 13†	28	Jan. 5†
Crescent City	Putnam	45	22	68.0	96	June 16	26	Jan. 4
Federal Point	Putnam	10	29	69.6	99	June 13†	31	Feb. 17†
Fenholloway	Taylor	75	14	.....	.....	.....	22	Feb. 17
Fernandina	Nassau	15	28	67.4	99	June 16	26	Jan. 5
Gainesville	Alachua	176	25	68.7	97	June 13	25	Feb. 17
Glen St. Mary	Baker	125	25	66.9	98	Sept. 12†	22	Feb. 17
Hilliard	Nassau	69	12	67.5	98	Aug. 29	22	Jan. 5
Jacksonville	Duval	222	50	68.0	95	June 13	25	Jan. 5
Jacksonville (2)	Duval .....	.....	4	.....	99	June 13	23	Feb. 17
Jasper	Hamilton	152	18	67.7	100	June 13	21	Feb. 17
Johnstown	Bradford	125	22	.....	98	June 13	.....	.....
Lake City	Columbia	210	37	67.3	100	June 13	22	Feb. 17
Live Oak	Suwanee	109	19	.....	102	June 13	.....	.....
Madison	Madison	143	21	68.1	100	June 13	24	Feb. 17

Melrose	Alachua	163							
Middleburg	Clay	39	20		99	Sept. 13	22	Feb. 17	
Monticello	Jefferson	207	17	67.1	98	June 13†	23	Jan. 5†	
Mount Pleasant	Gadsden	306	15		101	June 15	20	Feb. 17	
Old Town	Lafayette		3		95	June 13	21	Feb. 17	
Quincy	Gadsden		6	66.3	101	June 15	19	Feb. 17	
St. Augustine	St. Johns	10	69	69.0	97	Sept. 13	28	Jan. 5	
Satsuma Heights	Putnam	98	13		99	June 18	30	Jan. 5†	
Switzerland	St. Johns	14	28		101	Sept. 1	24	Feb. 17	
Tallahassee	Leon	192	34	66.5	99	June 15	24	Jan. 5†	
Central Division.									
Bartow	Polk	115	34	71.8	96	June 20†	29	Mar. 2	
Brooksville	Hernando		29	68.5	96	July 17	24	Jan. 4	
Clermont	Lake	105	28	72.4	98	Sept. 10	32	Mar. 1	
DeLand	Volusia	27	24	70.3	101	Aug. 22	25	Jan. 4	
Eustis	Lake	56	30	71.0	99	Aug. 25	28	Feb. 17†	
Fellsmere	St. Lucie	25	7	71.4	94	Aug. 24	30	Jan. 4	
Fort Meade	Polk	125	32				28	Jan. 4†	
Fort Pierce	St. Lucie	10	20	73.4	98	July 3	35	Mar. 4	
Inverness	Citrus	43	22	70.0	96	Aug. 25	29	Jan. 4†	
Isleworth ††	Orange								
Kissimmee	Osceola	65	29						
Lakeland	Polk	227	6	71.4	95	June 21	32	Mar. 1	
Lynne (near)	Marion								
Malabar	Brevard	28	29	72.8	99	July 4	33	Jan. 4	
McDonald ††	Orange	175	24	69.8	97	June 20	28	Mar. 2	
Merritts Island ††	Brevard	20	38	71.6	92	June 16†	37	Mar. 1	
New Smyrna	Volusia	14	36	69.1	97	Mar. 28	30	Jan. 4	
Ocala	Marion	98	29	68.9	96	July 16	25	Mar. 2	
Okeechobee	Okeechobee		3		96	July 3†			
Orange City	Volusia	39	27	69.6	99	Sept. 14	22	Jan. 4	

CLIMATOLOGICAL DATA FOR THE YEAR 1920.—(Continued)

STATIONS.	COUNTIES	Elevation, feet.	TEMPERATURE. IN DEGREES FAHRENHEIT					
			Length of Record, years.	Annual Mean.	Highest.	Date.	Lowest.	Date.
Orlando	Orange	111	29	71.5	99	Sept. 14	28	Mar. 2
Oxford	Sumter							
Pinellas Park	Pinellas	20	9	71.2	92	Aug. 14†	31	Mar. 2
Plant City	Hillsboro	121	27					
St. Cloud	Osceola		7		98	Sept. 14	31	Mar. 1
St. Leo	Pasco	190	26	69.4	92	June 19†	29	Jan. 5
St. Petersburg	Pinellas		6	72.2	93	June 19	36	Jan. 5
Sanford	Seminole	25	13	70.1	98	July 3	26	Jan. 4
Tampa	Hillsboro	104	31	71.3	93	Aug. 12	35	Jan. 5
Tarpon Springs	Pinellas	20	36	71.2	95	Aug. 6	31	Jan. 5†
Titusville	Brevard	16	25	70.5	98	June 14†	31	Mar. 2
Southern Division.								
Arcadia	DeSoto	61	19	71.8	100	June 19	28	Mar. 2
Avon Park	DeSoto	150	22	71.9	94	June 20	33	Jan. 4
Bradentown	Manatee	22	37	71.0	95	Aug. 18	31	Jan. 4†
Davie	Broward	10	8	72.4	93	July 4	25	Mar. 2
Fort Lauderdale	Broward	10	8	74.8	96	Sept. 14	32	Mar. 2
Fort Myers	Lee	12	49	73.2	96	June 19	33	Mar. 2

Griffin ††	Broward	12	8	72.0	94	July 3	26	Mar. 2
Homestead	Dade	13	11	73.6	96	Aug. 24	31	Mar. 2
Hypoluxo	Palm Beach	9	26	73.8	95	July 3†	26	Mar. 2
Jupiter	Palm Beach	28	23					
Key West	Monroe	15	50	76.6	91	Sept. 15	49	Mar. 2
Lock No. 1 ††	Broward							
Long Key	Monroe	9	5	77.2	97	July 28	45	Mar. 2
Miami (1)	Dade	83	19	74.0	89	Sept. 14	34	Mar. 2
Miami (2)	Dade	10	10	75.2	98	Sept. 10	32	Mar. 2
Moore Haven	DeSoto		3	71.4	96	Sept. 3	25	Jan. 4†
Punta Gorda	DeSoto	7	6		97	June 26†	30	Mar. 2
Ritta	Palm Beach	18	8		98	June 17	30	Mar. 7
Sand Key	Monroe	42	15	75.5	89	Sept. 14	52	Mar. 2
Western Division.								
Apalachicola	Franklin	24	17	67.0	98	July 26	26	Jan. †
Blountstown	Calhoun	50	13					
Bonifay	Holmes	111	15		100	June 15	23	Jan. 5
DeFuniak Springs	Walton	193	23		96	Sept. 1	22	Jan. 5†
Garniers (near) ††	Okaloosa	22	8	65.9	98	June 13†	21	Mar. 1†
Marianna	Jackson	120	19		101	June 15	19	Feb. 17
Pensacola	Escambia	151	41	66.3	94	June 13	24	Mar. 1
St. Andrews	Bay	14	24	68.0	98	June 14	23	Jan. 5
Wausau	Washington	250	22	66.0	99	June 13	23	Jan. 5†

CLIMATOLOGICAL DATA FOR THE YEAR 1920.—(Continued)

STATIONS.	COUNTIES.	PRECIPITATION, IN INCHES.							Number of rainy days.	SKY.				Prevailing wind direction.
		Length of record, years.	Total for year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.		Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
Northern Division														
Archer	Alachua	35												
Carrabelle	Franklin	22	51.04	9.42	Sept.	0.32	Oct.	0	79					
Cedar Keys	Levy	34	56.50	14.60	Sept.	0.40	Oct.	0	49	179	115	72	w.	
Crescent City	Putnam	22	65.03	11.75	July	0.07	Oct.	0	113	99	149	118	se.	
Federal Point	Putnam	29	61.32	13.52	Feb.	0.79	Oct.	0	127	155	164	47	ne.	
Fenholloway	Taylor	14												
Fernandina	Nassau	28	51.78	7.74	Sept.	0.40	Oct.	0	89				se.	
Gainesville	Alachua	32	63.71	11.36	Sept.	0.34	Oct.	0	118	144	157	65	ne.	
Glen St. Mary	Baker	25	56.58	10.20	Sept.	0.25	Oct.	0	81				ne.	
Hilliard	Nassau	12	64.83	10.23	Sept.	0.26	Oct.	0	108	198	130	38		
Jacksonville	Duval	50	59.20	9.16	Feb.	0.11	Oct.	T.	131	171	118	77	ne.	
Jacksonville (2) ..	Duval	4						0						
Jasper	Hamilton	18	61.58	9.97	April	1.00	Oct.	0	74				w.	
Johnstown	Bradford	23												
Lake City	Columbia	37	63.00	12.29	Sept.	0.83	Oct.	0	116				ne.	
Live Oak	Suwanee	23												
Madison	Madison	21	61.21	8.94	April	1.20	Oct.	0	132	184	55	127		

Melrose	Alachua ...	7	68.78	10.26	Aug.	0.29	Oct.	0	117	192	120	54	.....
Middleburg	Clay	20	61.45	10.72	Feb.	1.10	Oct.	0	.....	.....	.....	.....	.....
Monticello	Jefferson ..	17	63.82	9.56	Dec.	2.63	Mar.	0	125	198	100	68	s.
Mount Pleasant	Gadsden ...	15	60.77	10.33	Aug.	1.10	Oct.	0	.....	.....	.....	.....	ne.
Old Town	Lafayette ...	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quincy	Gadsden ...	6	51.90	7.13	Dec.	1.99	June	0	123	174	87	105	s.
St. Augustine	St. Johns ...	52	71.81	21.50	Feb.	0.75	Oct.	0	130	197	135	34	ne.
Satsuma Heights ..	Putnam	13	62.91	11.08	Feb.	0.68	Mar.	0	89	.....	.....	.....	ne.
Switzerland	St. Johns ...	29	53.06	9.82	July	0.53	Oct.	0	123	.....	.....	.....	.....
Tallahassee	Leon	36	62.55	9.75	Aug.	1.49	Oct.	0	131	160	71	135	s.
Central Division													
Bartow	Polk	34	59.03	10.84	Aug.	0.54	Mar.	0	130	206	137	23	se.
Brooksville	Hernando ..	29	57.77	13.28	June	0.37	Oct.	0	138	206	92	68	sw.
Clermont	Lake	28	57.18	11.25	June	0.00	Oct.	0	105	212	73	81	w.
DeLand	Volusia	18	54.75	8.81	Feb.	0.25	Oct.	0	117	231	83	52	s.
Eustis	Lake	30	50.99	7.10	June	0.99	Mar.	0	109	251	69	46	ne.
Fellsmere	St. Lucie ..	9	50.42	9.12	Sept.	0.80	Dec.	0	150	176	137	53	se.
Fort Meade	Polk	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Pierce	St. Lucie ..	26	52.30	9.67	Sept.	0.78	Dec.	0	140	86	173	107	se.
Inverness	Citrus	22	50.96	9.18	Sept.	0.25	Oct.	0	100	64	217	85	ne.
Isleworth ††.....	Orange	5	51.07	10.75	Sept.	0.00	Oct.	0	89	.....	.....	.....	.....
Kissimmee	Osceola	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lakeland	Polk	6	56.09	11.86	June	1.12	Jan.	0	75	275	63	28	ne.
Lynne (near)	Marion	7	56.84	8.00	May	0.06	Oct.	0	111	280	55	31	ne.
Malabar	Brevard	29	48.95	7.92	Sept.	0.38	Mar.	0	108	.....	.....	.....	n.
McDonald ††.....	Orange	18	48.53	8.45	Sept.	0.09	Oct.	0	112	.....	.....	.....	ne.
Merritts Island ††..	Brevard	42	60.85	13.88	July	0.69	Mar.	0	121	239	70	57	se.
New Smyrna	Volusia	37	64.24	14.40	Feb.	0.75	Mar.	0	119	82	243	41	ne.
Ocala	Marion	29	58.82	10.40	Aug.	0.12	Oct.	0	109	115	116	135	.....
Okeechobee	Okeechobee ..	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Orange City	Volusia	30	55.34	8.59	Feb.	0.58	Mar.	0	109	129	192	45	ne.

CLIMATOLOGICAL DATA FOR THE YEAR 1920.—(Continued)

STATIONS.	COUNTIES.	PRECIPITATION, IN INCHES.							SKY.				Prevailing wind direction.
		Length of record, years.	Total for year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.	Number of rainy days.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
Orlando	Orange	29	60.13	13.96	Sept.	0.72	Mar.	0	121	181	166	19	n.
Oxford	Sumter .....	...	...	...	...	...	...	...	...	...	...	...	...
Pinellas Park	Pinellas	9	60.80	11.65	July	0.74	Mar.	0	118	...	...	...	w.
Plant City	Hillsboro	27	...	...	...	...	...	...	...	...	...	...	...
St. Cloud	Osceola	7	...	...	...	...	...	0	...	...	...	...	se.
St. Leo	Pasco	26	50.31	10.64	July	0.30	Oct.	0	119	189	107	70	e.
St. Petersburg	Pinellas	6	57.42	12.28	July	0.61	Mar.	0	123	143	157	66	ne.
Sanford	Seminole	13	55.24	8.09	Aug.	0.71	Mar.	0	131	97	91	178	se.
Tampa	Hillsboro	31	49.42	12.20	July	0.60	Mar.	0	112	101	159	106	ne.
Tarpon Springs	Pinellas	29	54.43	9.69	Sept.	0.65	Jan.	0	95	188	115	63	w.
Titusville	Brevard	25	69.95	13.26	Aug.	0.46	Mar.	0	124	129	128	119	se.
Southern Division													
Arcadia	DeSoto	19	49.95	10.74	July	0.80	Jan.	0	71	...	...	...	e.
Avon Park	DeSoto	22	53.45	13.65	July	9.76	Mar.	0	112	134	163	69	se.
Bradentown	Manatee	37	61.40	12.79	July	0.31	Oct.	0	92	194	114	58	se.
Davie	Broward	8	56.79	10.56	Sept.	0.51	Jan.	0	150	124	133	109	se.
Fort Lauderdale	Broward	8	48.63	8.48	Sept.	0.41	Mar.	0	124	178	121	67	e.
Fort Myers	Lee	54	53.28	15.22	July	0.22	Jan.	0	132	238	73	55	ne.

Griffin ††	Broward	8	60.00	9.74	Sept.	0.85	Mar.	0	91	172	117	77	e.
Homestead	Dade	10	67.67	14.90	May	0.80	Mar.	0	99	202	66	98	se.
Hypoluxo	Palm Beach	25	63.32	10.27	July	1.19	Dec.	0	115	199	100	67	se.
Jupiter	Palm Beach	23											
Key West	Monroe	50	34.70	11.89	Sept.	0.07	Jan.	0	96	165	123	78	e.
Miami (1)	Broward	8	57.66	9.38	Sept.	0.52	Jan.	0	109	187	122	57	e.
Lock No. 1 ††	Monroe	5	44.18	12.60	Sept.	0.31	Mar.	0	102	256	70	40	e.
Long Key	Dade	30	47.61	10.33	May	0.06	Mar.	0	132	102	141	123	e.
Miami (2)	Dade	10	50.85	9.94	May	0.11	Mar.	0	115	183	109	74	se.
Moore Haven	DeSoto	3	51.03	15.21	July	0.53	Mar.	0	123	193	152	21	e.
Punta Gorda	DeSoto	6	55.00	11.33	July	T.	Mar.	0	82				ne.
Ritta	Palm Beach	8											e.
Sand Key	Monroe	15						0		173	128	65	se.
Western Division													
Apalachicola	Franklin	17	50.31	8.46	April	0.46	Oct.	0	126	101	155	110	n.
Blountstown	Calhoun	13											
Bonifay	Holmes	15	67.05	11.25	April	1.50	Oct.	0	116	227	70	69	nw.
DeFuniak Springs	Walton	23	87.28	14.39	Aug.	2.85	Oct.	0	127				e.
Garniers (near) ††	Okaloosa	8	72.69	12.39	Aug.	3.39	Mar.	0	93				sw.
Marianna	Jackson	19	61.93	7.91	April	1.30	Oct.	0	93	129	151	86	nw.
Pensacola	Escambia	41	69.59	12.53	Sept.	1.31	Mar.	T.	128	98	112	156	n.
St. Andrews	Bay	24	60.97	7.50	Jan.	3.04	Junt	0	107	179	121	66	sw.
Wausau	Washin'ton	22	65.22	11.26	April	2.15	Mar.	0	69				s.

†On other dates also.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer	2.95	-0.52	5.00	+1.46	0.76	-2.61
Carrabelle	5.85	+2.52	3.84	-0.59	2.15	-1.84
Cedar Keys	1.80	-1.76	3.30	+0.58	0.50	-2.42
Crescent City	2.47	-0.23	8.90	+5.26	0.51	-2.32
Federal Point	2.87	-0.03	13.52	*10.20	1.31	-1.80
Fenholloway	3.21	-0.16	6.44	+3.26	.....	.....
Fernandina	1.85	-1.02	7.00	+2.96	1.72	-1.56
Gainesville	3.19	-0.17	6.61	+3.60	1.01	-2.23
Glen St. Mary.....	1.14	-1.44	6.80	+2.75	0.85	-2.85
Hilliard	1.34	-0.70	7.69	+4.69	1.96	-1.26
Jacksonville	1.21	-1.91	9.16	+5.63	0.82	-2.70
Jacksonville (2)	1.19	.....	8.88	.....	1.04	.....
Jasper	2.23	-0.76	6.47	+2.29	1.65	-2.35
Johnstown	0.67	-1.94	.....	.....	.....	.....
Lake City	1.31	-2.30	7.68	+3.51	0.96	-3.24
Live Oak .....	.....	.....	.....	.....	.....	.....
Madison	2.14	-1.62	5.56	+0.96	2.03	-1.65
Melrose	3.23	.....	10.02	.....	0.84	.....
Middleburg	1.38	-1.50	10.72	+7.08	1.15	-2.76
Monticello	4.69	+0.50	5.44	+1.00	2.63	-0.44
Mount Pleasant	5.24	+2.12	4.81	-1.17	3.86	+0.55
Old Town	2.27	.....	4.85	.....	0.57	.....
Quincy	5.22	.....	5.06	.....	2.66	.....
St. Augustine	4.00	+1.29	21.50	*18.51	1.76	-1.22
Satsuma Heights	3.66	+1.39	11.08	+8.90	0.68	-1.63
Switzerland	1.87	-0.78	7.57	+4.24	0.88	-2.54
Tallahassee	3.96	+0.02	4.42	-0.51	2.35	-2.53
Central Division.						
Bartow	1.66	-0.87	3.73	+0.85	0.54	-1.88
Brooksville	1.81	-1.40	2.98	-0.44	9.99	-1.33
Clermont	2.25	-0.55	4.13	+0.90	0.60	-1.46
DeLand	2.68	-0.38	8.81	+5.44	1.09	-1.34
Eustis	1.55	-1.56	4.28	+1.24	0.99	-1.63
Fellsmere	1.65	.....	1.89	.....	0.85	.....
Fort Meade	1.90	-0.69	3.52	+0.88	0.68	-2.07
Fort Pierce	7.38	+3.99	1.87	-0.89	2.13	-0.71
Inverness	1.97	-0.80	3.06	-0.23	0.40	-2.41
Isleworth	1.17	.....	4.35	.....	0.27	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Kissimmee	1.12	.....	4.02	.....	1.28	.....
Lakeland	6.18	.....	6.33	.....	0.85	.....
Lynne (near)	1.85	-1.01	3.49	+1.14	0.38	-1.75
Malabar	1.80	-1.12	3.77	+0.78	0.33	-1.66
McDonald	3.26	+0.18	8.59	+5.96	0.69	-1.79
Merritts Island	3.41	+0.11	14.40	*11.40	0.75	-2.16
New Smyrna	2.11	-0.40	6.08	+2.81	0.69	-2.14
Ocala .....	.....	.....	.....	.....	.....	.....
Okeechobee	2.54	-0.06	8.59	+5.91	0.58	-2.11
Orange City	1.08	-1.64	4.85	+2.11	0.72	-1.62
Orlando .....	.....	.....	.....	.....	.....	.....
Oxford	2.71	.....	2.51	.....	0.74	.....
Pinellas Park .....	.....	.....	.....	.....	.....	.....
Plant City	0.64	.....	8.20	.....	0.10	.....
St. Cloud	2.28	-1.26	3.18	-0.42	0.84	-1.72
St. Leo	1.77	.....	2.74	.....	0.61	.....
St. Petersburg	2.09	-0.54	6.48	+4.67	0.71	-2.38
Sanford	2.70	-0.10	3.10	-0.25	0.60	-2.21
Tampa	0.65	-2.22	2.04	-1.11	0.66	-1.74
Tarpon Springs	1.66	-0.52	10.60	+7.29	0.46	-2.14
Titusville .....	.....	.....	.....	.....	.....	.....
Southern Division.						
Arcadia	0.80	-1.59	2.09	-0.24	0.82	-2.17
Avon Park	1.73	-0.64	2.44	-0.42	0.76	-1.41
Bradentown	2.07	-0.85	4.50	+1.39	0.52	-1.97
Davie	0.51	.....	2.61	.....	2.07	.....
Fort Lauderdale	1.60	.....	2.86	.....	0.41	.....
Fort Myers	0.22	-2.03	3.14	+0.91	0.39	-1.66
Griffin	2.06	.....	2.84	.....	0.85	.....
Homestead	1.11	.....	2.15	.....	0.80	.....
Hypoluxo	2.82	-0.55	5.12	+1.74	3.69	+1.25
Jupiter .....	.....	.....	.....	.....	.....	.....
Key West	0.07	-1.91	1.38	-0.31	0.58	-0.90
Lock No. 1	0.52	.....	1.98	.....	0.83	.....
Long Key	1.41	.....	1.61	.....	0.31	.....
Miami (1)	0.41	-3.04	1.60	-1.21	0.06	-2.66
Miami (2)	0.60	.....	1.51	.....	0.11	.....
Moore Haven	2.10	.....	2.59	.....	0.53	.....
Punta Gorda	0.97	.....	2.52	.....	T.	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

STATIONS.	January.		February.		March.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Ritta	0.18	.....	.....	.....	3.40	.....
Sand Key .....	.....	.....	.....	.....	.....	.....
Western Division.						
Apalachicola	4.05	-0.13	2.95	-0.55	2.68	-0.17
Blountstown	5.29	.....	5.98	.....	3.13	.....
Bonifay	4.52	+0.11	5.63	+0.33	1.93	-2.10
DeFuniak Springs	7.65	+3.76	5.43	-1.31	3.72	-1.49
Garniers (near)	7.25	.....	5.43	.....	3.39	.....
Marianna	5.89	+2.43	6.54	+1.03	2.82	-2.47
Pensacola	5.51	+1.47	3.18	-1.47	1.31	-4.05
St. Andrews	7.50	+4.07	5.50	+0.80	3.83	+0.02
Wausau	5.69	+1.81	4.64	-0.29	2.15	-3.21

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer	7.67	+5.48	4.71	+1.02	.....	.....
Carrabelle	6.69	+4.38	3.15	+0.43	1.98	-2.89
Cedar Keys	6.20	+4.49	3.50	+1.71	2.40	-3.29
Crescent City	4.00	+1.92	6.80	+2.93	10.19	+4.40
Federal Point	3.79	+1.18	8.01	+4.27	7.95	+1.96
Fenholloway .....	.....	.....	.....	.....	.....	.....
Fernandina	4.20	+1.71	5.77	+2.38	5.03	+0.13
Gainesville	8.24	+6.33	5.52	+2.42	5.99	-0.71
Glen St. Mary	5.25	+2.51	4.65	+0.51	6.34	+0.67
Hilliard	8.73	+6.91	4.63	+0.53	4.98	-1.11
Jacksonville	3.42	+0.70	7.41	+3.16	8.27	+2.74
Jacksonville (2)	3.85	.....	6.87	.....	7.23	.....
Jasper	9.97	+7.68	4.82	+0.81	3.92	-2.76
Johnstown .....	.....	.....	5.89	+2.35	5.33	-1.21
Lake City	7.26	+4.65	6.78	+3.67	4.60	-2.25
Live Oak .....	.....	.....	5.06	+1.12	4.64	-3.09
Madison	8.94	+6.07	4.87	+0.74	6.71	+0.86
Melrose	6.71	.....	6.90	.....	7.15	.....
Middleburg	5.02	+2.23	6.79	+1.46	10.13	+3.26
Monticello	8.26	+5.04	3.50	-0.42	4.45	-2.24
Mount Pleasant	7.76	+4.08	4.25	+1.16	3.44	-2.67
Old Town	8.87	.....	7.07	.....	9.08	.....
Quincy	6.27	.....	4.32	.....	1.99	.....
St. Augustine	4.49	+1.85	6.36	+2.96	10.22	+5.05
Satsuma Heights	2.97	+1.04	7.24	+3.88	8.60	+3.06
Switzerland	4.47	+1.90	6.01	+2.71	7.09	+1.71
Tallahassee	7.95	+1.80	4.79	+1.06	4.22	-2.24
Central Division.						
Bartow	9.70	+7.84	3.05	-0.62	7.01	-1.00
Brooksville	5.33	+3.24	2.28	-1.24	13.28	+4.86
Clermont	7.08	+5.08	5.09	+1.51	11.25	+4.57
DeLand	4.94	+2.85	4.66	+0.98	7.51	+0.18
Eustis	5.33	+3.13	5.72	+2.22	7.10	+0.95
Fellsmere	6.34	.....	1.75	.....	8.88	.....
Fort Meade	9.45	+7.46	2.50	-1.95	4.11	-5.27
Fort Pierce	4.22	+1.73	4.50	+0.35	2.83	-4.47
Inverness	5.12	+3.05	3.73	-0.45	8.89	+2.79
Isleworth	6.69	.....	3.97	.....	4.23	.....

CLIMATOLOGICAL DATA—Continued.
Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Kissimmee	6.66	.....	3.50	.....	11.86	.....
Lakeland	3.67	.....	8.00	.....	7.27	.....
Lynn (near)	6.60	+4.59	3.81	-0.24	5.75	+0.33
Malabar	6.91	+4.98	3.60	+0.07	5.53	+0.28
McDonald	6.19	+3.50	4.68	+0.93	3.50	-2.96
Merritts Island	3.62	+1.57	3.78	+0.48	9.78	+4.28
New Smyrna	5.75	+3.78	6.37	+2.04	6.17	-1.29
Ocala .....	.....	.....	2.91	.....	4.67	.....
Okeechobee	4.18	+2.53	5.49	+2.04	7.79	+1.02
Orange City	6.72	+4.70	6.67	+2.86	5.89	-1.37
Orlando .....	.....	.....	.....	.....	.....	.....
Oxford	9.14	.....	2.51	.....	8.19	.....
Pinellas Park .....	.....	.....	.....	.....	.....	.....
Plant City	6.69	.....	3.44	.....	5.26	.....
St. Cloud	4.49	+2.50	2.68	-1.15	7.79	-1.03
St. Leo	9.09	.....	3.86	.....	4.95	.....
St. Petersburg	5.03	+1.89	5.18	+2.62	6.54	+0.21
Sanford	8.04	+6.19	1.49	-1.43	4.49	-3.85
Tampa	5.60	+3.88	5.99	+3.49	6.15	-0.78
Tarpon Springs	4.74	+2.90	3.40	-1.38	7.28	-0.02
Titusville .....	.....	.....	.....	.....	.....	.....
Southern Division .						
Arcadia	5.84	+4.08	1.79	-2.17	4.73	-2.73
Avon Park	7.57	+5.62	1.58	-3.28	7.40	-1.94
Bradentown	9.82	+7.94	2.20	-0.83	5.57	-2.62
Davie	5.98	.....	3.13	.....	4.70	.....
Fort Lauderdale	3.88	.....	6.38	.....	4.26	.....
Fort Myers	4.29	+1.99	1.14	-2.75	8.40	-0.77
Griffin	5.15	.....	6.76	.....	7.17	.....
Homestead	4.57	.....	14.90	.....	2.97	.....
Hypoluxo	5.09	+2.36	4.39	-1.56	4.91	-3.91
Jupiter .....	.....	.....	.....	.....	.....	.....
Key West	3.36	+2.06	3.18	-0.18	3.41	-0.84
Lock No. 1.	3.12	.....	7.85	.....	5.55	.....
Long Key	3.38	.....	7.83	.....	2.50	.....
Miami (1)	3.15	+0.56	10.33	+3.96	3.90	-3.99
Miami (2)	3.48	.....	9.94	.....	4.92	.....
Moore Haven	5.13	.....	3.05	.....	6.84	.....
Punta Gorda	8.70	.....	3.05	.....	5.41	.....
Ritta	3.57	.....	1.61	.....	.....	.....
Sand Key	5.39	.....	2.26	.....	0.84	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	April.		May.		June.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Western Division.						
Apalachicola	8.46	+5.98	2.99	-0.44	2.86	-2.06
Blountstown	6.91	.....	3.91	.....	4.98	.....
Bonifay	11.25	+7.33	4.40	+0.28	6.49	+1.22
DeFuniak Springs	9.25	+6.12	10.00	+5.93	9.94	+4.27
Garniers (near)	9.38	.....	6.17	.....	4.14	.....
Marianna	7.91	+4.80	7.83	+4.17	4.45	-0.40
Pensacola	8.63	+5.47	4.81	+2.13	4.39	-0.48
St. Andrews	5.71	+3.35	7.11	+3.24	3.04	-2.09
Wausau	11.26	+8.12	4.12	-0.33	6.13	+0.39

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer .....	.....	.....	.....	.....	.....	.....
Carrabelle	3.70	-2.37	2.68	-4.48	9.42	+2.12
Cedar Keys	4.65	-3.37	9.00	+0.74	14.60	+8.76
Crescent City	11.75	+5.16	5.65	-1.53	8.40	+1.56
Federal Point	6.10	-0.80	3.53	-3.57	7.69	-0.11
Fenholloway .....	.....	.....	.....	.....	.....	.....
Fernandina	3.60	-2.40	4.92	-1.24	7.74	-0.52
Gainesville	7.00	-0.22	5.73	-1.14	11.36	+5.64
Glen St. Mary	7.80	+0.57	5.95	-1.28	10.20	+5.10
Hilliard	8.18	+0.73	8.06	-0.55	10.23	+4.86
Jacksonville	5.47	-0.73	7.46	+1.25	7.14	-0.89
Jacksonville (2) .....	.....	.....	.....	.....	.....	.....
Jasper	9.00	+3.09	6.60	-0.61	5.60	+1.22
Johnstown	8.44	+0.50	5.41	-2.59	.....	.....
Lake City	4.34	-3.43	7.31	+0.65	12.29	+6.91
Live Oak	6.15	-0.64	9.17	+2.11	8.09	+3.38
Madison	4.45	-3.00	6.72	-0.55	5.62	+0.10
Melrose	4.43	.....	10.26	.....	10.11	.....
Middleburg	8.22	+0.96	3.17	-3.47	6.74	-0.18
Monticello	7.05	+0.67	6.88	+0.64	3.89	-2.36
Mount Pleasant	3.91	-4.03	10.33	+5.41	3.28	-2.97
Old Town	5.97	.....	8.63	.....	.....	.....
Quincy	5.10	.....	5.83	.....	2.08	.....
St. Augustine	3.20	-2.05	3.01	-3.04	10.52	+4.03
Satsuma Heights	7.75	+1.24	6.85	-0.23	6.96	+2.07
Switzerland	9.82	+2.35	6.32	-0.10	3.02	-5.04
Tallahassee	8.12	+0.60	9.75	+2.71	6.63	+1.54
Central Division.						
Bartow	7.31	-0.10	10.84	+2.95	7.95	-0.06
Brooksville	8.50	-1.21	6.08	-2.93	8.31	+1.31
Clermont	4.88	-2.55	9.33	+1.80	8.73	+2.14
DeLand	7.86	-0.03	4.29	-3.15	7.09	+1.78
Eustis	6.89	-0.14	4.32	-2.12	5.42	-0.93
Fellsmere	6.38	.....	7.71	.....	9.12	.....
Fort Meade	11.32	+2.27	.....	.....	.....	.....
Fort Pierce	5.91	+0.48	5.32	-0.80	9.67	+2.58
Inverness	5.17	-4.78	5.40	-2.04	9.18	+3.40
Isleworth	7.54	.....	6.90	.....	10.75	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Precipitation.	Departure	Precipitation	Departure.	Precipitation	Departure.
Kissimmee	10.14	+3.25	7.46	+0.42	9.55	+2.72
Lakeland	4.96	.....	7.55	.....	8.43	.....
Lynne (near)	4.75	.....	6.66	.....	7.60	.....
Malabar	7.55	+2.83	3.18	-1.78	7.92	+0.49
McDonald	5.16	-2.34	6.36	-0.59	8.45	+2.55
Merritts Island	13.88	+8.44	1.91	-3.62	9.85	+2.24
New Smyrna	4.33	-1.22	4.16	-1.74	10.61	+2.98
Ocala	6.56	-1.45	10.40	+2.91	7.36	+0.57
Okeechobee	9.62	.....	3.72	.....	9.70	.....
Orange City	6.20	-0.13	6.72	-0.30	7.53	+1.41
Orlando	7.49	+0.24	5.35	-1.80	13.96	+6.57
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	11.65	.....	7.46	.....	9.76	.....
Plant City .....	.....	.....	.....	.....	.....	.....
St. Cloud	8.42	.....	5.97	.....	6.24	.....
St. Leo	10.64	+1.79	5.05	-4.28	8.56	+2.09
St. Petersburg	12.28	.....	8.31	.....	8.23	.....
Sanford	7.36	+0.55	8.09	+2.33	6.97	+1.32
Tampa	12.20	+3.77	5.66	-2.93	6.49	-0.92
Tarpon Springs	7.34	-0.76	7.74	-2.05	9.69	+2.64
Titusville	10.19	+3.72	13.26	+7.87	8.57	+1.01
Southern Division.						
Arcadia	10.74	+2.45	5.53	-3.37	8.25	+2.03
Avon Park	13.65	+5.80	2.03	-5.45	8.01	+2.20
Bradentown	12.79	+2.37	5.76	-3.43	9.32	+1.72
Davie	5.81	.....	7.83	.....	10.56	.....
Fort Lauderdale	3.83	.....	4.31	.....	8.48	.....
Fort Myers	15.22	+7.22	5.84	-2.49	6.98	-0.69
Griffin	5.17	.....	4.60	.....	9.74	.....
Homestead	11.63	.....	2.99	.....	14.52	.....
Hypoluxo	10.27	+4.92	4.66	-0.26	8.55	+0.02
Jupiter .....	.....	.....	.....	.....	.....	.....
Key West	0.54	-3.05	5.15	+0.46	11.89	+5.10
Lock No. 1	7.20	.....	9.23	.....	9.38	.....
Long Key	1.31	.....	5.29	.....	12.60	.....
Miami (1)	6.61	-0.63	4.12	-3.48	6.94	-2.67
Miami (2)	5.25	.....	5.75	.....	8.89	.....
Moore Haven	15.21	.....	4.51	.....	3.18	.....
Punta Gorda	11.33	.....	8.79	.....	4.50	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal.

STATIONS.	July.		August.		September.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Ritta	9.22	.....	4.08	.....	5.72	.....
Sand Key	0.50	.....	2.61	.....	9.49	.....
Western Division.						
Apalachicola	1.44	-5.60	5.32	-2.53	8.46	-1.23
Blountstown	4.64	.....	.....	.....	.....	.....
Bonifay	5.62	-0.02	10.93	+6.25	3.02	-1.91
DeFuniak Springs	5.76	-1.69	14.39	+5.15	5.11	-1.26
Garniers (near)	4.91	.....	12.39	.....	6.20	.....
Marianna	4.97	-1.65	6.80	+1.34	2.66	-3.31
Pensacola	6.74	-0.53	11.56	+4.40	12.53	+7.30
St. Andrews	5.40	-1.51	5.29	-3.21	3.57	-3.58
Wausau	6.14	-1.12	8.96	+1.69	3.11	-3.63

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

Stations.	October.		November.		December.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Northern Division.						
Archer						
Carrabelle	0.32	-2.80	4.30	+2.12	6.96	+1.67
Cedar Keys	0.40	-2.72	4.90	+2.58	5.25	+2.67
Crescent City	0.07	-3.69	3.12	+1.59	3.17	+0.57
Federal Point	0.79	-4.16	2.37	+0.33	3.39	+0.54
Fenholloway			6.65	+4.13	7.19	+2.84
Fernandina	0.40	-4.70	6.05	+3.45	3.50	+0.14
Gainesville	0.34	-2.34	4.86	+2.97	3.86	+0.81
Glen St. Mary	0.25	-2.79	3.75	+2.16	3.60	+0.28
Hilliard	0.26	-3.17	3.89	+2.13	4.88	+1.83
Jacksonville	0.11	-4.95	5.38	+3.19	3.35	+0.36
Jacksonville (2)			5.20		4.03	
Jasper	1.00	-1.47	4.50	+2.75	5.82	+2.01
Johnstown	T.	-3.05	1.48	-0.17	4.38	+0.97
Lake City	0.83	-2.20	4.37	+1.83	5.27	+1.65
Live Oak	0.79	-2.10	5.48	+3.28	6.13	+3.26
Madison	1.20	-1.70	4.69	+2.55	8.28	+4.50
Melrose	0.29		4.97		3.84	
Middleburg	0.10	-4.22	4.21	+2.75	3.82	+0.76
Monticello	3.72	+0.84	3.75	+1.60	9.56	+4.07
Mount Pleasant	1.10	-1.78	4.36	+2.40	8.43	+3.81
Old Town						
Quincy	2.26		4.04		7.13	
St. Augustine	0.75	-4.23	2.90	+0.62	3.10	+0.42
Satsuma Heights	1.08	-3.69	2.18	+0.28	3.86	+0.26
Switzerland	0.53	-3.85	2.78	+0.62	2.70	-0.18
Tallahassee	1.49	-1.66	2.86	+0.21	6.01	+1.41
Central Division.						
Bartow	2.50	-1.19	2.87	+1.09	1.87	-0.52
Brooksville	0.37	-3.00	5.14	+3.37	2.70	+0.22
Clermont	0.00	-3.54	1.91	+0.41	1.93	-0.38
DeLand	0.25	-4.64	4.53	+2.84	1.04	-1.10
Eustis	1.41	-1.98	6.12	+4.55	1.86	-0.46
Fellsmere	1.88		3.17		0.80	
Fort Meade						
Fort Pierce	4.09	-2.07	3.50	+0.36	0.78	-1.49
Inverness	0.25	-2.52	4.29	+2.57	3.50	+0.72

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

Stations.	October.		November.		December.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Isleworth	0.00	.....	3.22	.....	1.98	.....
Kissimmee	0.98	-3.50	3.35	+1.41	.....	.....
Lakeland	1.21	.....	4.34	.....	1.16	.....
Lynne (near)	0.06	.....	2.52	.....	2.95	.....
Malabar	2.76	-4.35	3.33	+0.96	2.33	-0.47
McDonald	0.09	-4.36	4.30	+2.11	2.23	+0.09
Merritts Island	2.02	-3.79	4.47	+2.18	1.81	-0.64
New Smyrna	2.58	-3.64	4.33	+1.54	2.49	-0.02
Ocala	0.12	-2.67	3.98	+2.22	3.23	+0.75
Okeechobee .....	.....	.....	.....	.....	.....	.....
Orange City	0.76	-3.65	3.74	+1.98	1.22	-0.74
Orlando	1.55	-3.60	3.62	+2.03	2.23	+0.08
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	0.59	.....	3.29	.....	2.25	.....
Plant City .....	.....	.....	.....	.....	.....	.....
St. Cloud	1.21	.....	4.31	.....	.....	.....
St. Leo	0.30	-3.03	2.82	+0.85	1.68	-1.01
St. Petersburg	0.61	.....	3.49	.....	1.48	.....
Sanford	1.40	-5.13	3.22	+1.76	2.17	-0.01
Tampa	0.12	-2.85	3.07	+1.35	1.46	-0.56
Tarpon Springs	0.97	-1.80	5.57	+3.64	2.03	-0.41
Titusville	0.83	-4.64	6.52	+4.47	2.04	-0.74
Southern Division.						
Arcadia	3.00	-0.80	3.94	+2.56	2.42	+0.20
Avon Park	2.36	-2.03	3.67	+2.02	2.25	+0.03
Bradentown	0.31	-2.71	6.81	+5.10	1.73	-0.86
Davie	6.73	.....	5.41	.....	1.45	.....
Fort Lauderdale	6.02	.....	5.51	.....	1.09	.....
Fort Myers	3.00	-0.47	3.47	+2.17	1.19	-0.53
Griffin	9.39	.....	4.59	.....	1.68	.....
Homestead	5.64	.....	4.44	.....	1.95	.....
Hypoluxo	8.86	-1.35	3.77	+0.35	1.19	-1.24
Jupiter	9.93	+0.45	3.17	+0.12	0.73	-2.14
Key West	2.25	-3.13	1.97	-0.39	0.92	-0.92
Lock No. 1	3.98	.....	6.12	.....	0.90	.....
Long Key	3.53	.....	3.40	.....	1.01	.....
Miami (1)	5.04	-5.50	3.73	+1.18	1.72	-0.52
Miami (2)	4.84	.....	3.38	.....	2.18	.....
Moore Haven	2.72	.....	4.54	.....	0.63	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

Stations.	October.		November.		December.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Punta Gorda	1.69	.....	6.24	.....	1.80	.....
Ritta	1.20	.....	2.89	.....	1.84	.....
Sand Key	0.37	.....	2.73	.....	1.25	.....
Western Division.						
Apalachicola	0.46	-3.08	4.72	+2.03	5.92	+0.99
Blountstown .....	.....	.....	4.31	.....	4.46	.....
Bonifay	1.50	-1.28	4.00	+1.26	7.76	+3.33
DeFuniak Springs	2.85	-0.72	5.39	+1.76	7.79	+2.69
Garniers (near)	3.53	.....	4.30	.....	5.60	.....
Marianna	1.30	-1.71	3.59	+1.01	7.17	+2.86
Pensacola	2.27	-1.81	3.08	-0.66	5.58	+1.41
St. Andrews	3.30	-0.92	4.10	+1.07	6.62	+1.47
Wausau	3.70	+0.87	3.29	-0.36	6.03	+0.77

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

Stations.	Annual.	
	Precipitation.	Departure.
Northern Division		
Archer	51.04	— 1.73
Carrabelle	56.50	+ 7.97
Cedar Keys	65.03	+15.62
Crescent City	61.32	+ 8.01
Federal Point		
Fenholloway	51.78	— 0.67
Fernandina	63.71	+14.96
Gainesville	56.58	+ 6.19
Glen St. Mary	64.83	+14.89
Hilliard	59.20	+ 5.85
Jacksonville		
Jacksonville (2)	61.58	+11.90
Jasper		
Johnstown	63.00	+ 9.45
Lake City		
Live Oak	61.21	+ 7.26
Madison	68.78	.....
Melrose	61.45	+ 6.37
Middleburg	63.82	+ 8.90
Monticello	60.77	+ 6.91
Mount Pleasant		
Old Town	51.90	.....
Quincy	+71.81	+24.19
St. Augustine	62.91	+16.57
Satsuma Heights	53.06	+ 1.04
Switzerland	62.55	+ 5.41
Tallahassee		
Central Division.		
Bartow	59.03	+ 6.49
Brooksville	57.77	+ 1.45
Clermont	57.18	+ 7.93
DeLand	54.75	+ 3.43
Eustis	50.99	+ 3.27
Fellsmere	50.42	.....
Fort Meade		
Fort Pierce	52.30	— 0.94
Inverness	50.96	— 0.70

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

Stations.	Annual.	
	Precipitation.	Departure.
Isleworth	51.07	.....
Kissimmee .....	.....	.....
Lakeland	56.09	.....
Lynne (near)	56.84	.....
Malabar	48.95	+ 0.74
McDonald	48.53	+ 0.79
Merritts Island	60.85	+10.63
New Smyrna	64.24	+13.81
Ocala	58.82	+ 7.83
Okeechobee .....	.....	.....
Orange City	55.34	+ 7.90
Orlando	60.13	+ 8.56
Oxford .....	.....	.....
Pinellas Park	60.80	.....
Plant City .....	.....	.....
St. Cloud .....	.....	.....
St. Leo	50.31	— 6.67
St. Petersburg	57.42	.....
Sanford	55.24	+ 7.29
Tampa	49.42	— 3.79
Tarpon Springs	54.43	+ 2.78
Titusville	69.95	+17.82
Southern Division.		
Arcadia	49.95	— 1.75
Avon Park	53.45	+ 0.50
Bradentown	61.40	+ 5.25
Davie	56.79	.....
Fort Lauderdale	48.63	.....
Fort Myers	53.28	+ 0.90
Griffin	60.00	.....
Homestead	67.67	.....
Hypoluxo	63.32	+ 1.77
Jupiter .....	.....	.....
Key West	34.70	— 4.01
Lock No. 1	57.66	.....
Long Key	44.18	.....
Miami (1)	47.61	—18.00
Miami (2)	50.85	.....
Moore Haven	52.03	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Precipitation for the Year 1920, with
Departures from the Normal—Continued.

Stations.	Annual.	
	Precipitation.	Departure.
Punta Gorda	55.00	.....
Ritta .....		.....
Sand Key .....		.....
Western Division.		
Apalachicola	50.31	— 6.79
Blountstown .....		.....
Bonifay	67.05	+14.80
DeFuniak Springs	87.28	+23.21
Garniers (near)	72.69	.....
Marianna	61.93	+ 8.10
Pensacola	69.59	+13.18
St. Andrews	60.97	+ 2.71
Wausau	66.22	+ 4.71

T. Amount too small to measure.

* Indicates plus.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer	58.0 ²	+ 2.2	54.2 ²	- 4.2	60.0	- 4.0
Carrabelle			52.5 ⁷	- 1.9	55.8	- 5.8
Cedar Keys	58.6	+ 1.6	55.0	- 4.0	59.4	- 3.8
Crescent City	58.2	+ 1.7	54.6	- 3.6	60.3	- 5.3
Federal Point	58.6	+ 2.0	55.0	- 2.8	61.6	- 2.8
Fenholloway	58.1		52.4			
Fernandina	55.8	+ 1.9	52.7 ¹	- 2.6	59.0 ²	- 3.3
Gainesville	58.4	+ 2.3	53.7	- 2.9	61.4	- 3.5
Glen St. Mary	56.4 ²	+ 1.6	52.9 ²	- 2.9	58.6	- 5.1
Hilliard	55.9	- 0.3	52.6	- 4.1	59.2	- 3.5
Jacksonville	57.3	+ 3.4	53.9	- 3.0	59.5	- 2.4
Jacksonville (2)	55.0		51.8		58.0	
Jasper	55.2 ²	+ 1.6	53.0 ⁴	- 1.1	60.2	- 2.5
Johnstown						
Lake City	56.6	+ 1.2	52.6	- 4.6	59.9	- 3.5
Live Oak						
Madison	56.8	+ 2.5	52.8	- 2.5	59.5	- 2.8
Melrose						
Middleburg			53.5 ⁵	- 1.9	60.5 ⁴	- 2.8
Monticello	56.3	+ 2.2	52.2	- 2.1	58.8	- 4.1
Mount Pleasant	55.6	+ 0.4	51.8	- 1.5		
Old Town	57.0		52.8		60.8 ²	
Quincy	55.6		50.8 ⁴		57.9	
St. Augustine	59.0	+ 2.7	55.3	- 3.3	60.4	- 2.5
Satsuma Heights	59.4	+ 1.4	55.5	- 2.9	61.8 ²	- 2.2
Switzerland						
Tallahassee	55.2	+ 2.8	52.4	- 2.0	58.4	- 2.7
Central Division						
Bartow	62.9	+ 2.2	59.7	- 3.3	66.1	- 1.1
Brooksville	62.9	+ 2.2	59.7	- 3.3	66.1	- 4.1
Clermont	64.2	+ 3.8	60.3	- 1.7	65.8	- 2.7
DeLand	59.8	+ 1.6	56.2	- 2.9	63.7	- 1.8
Eustis	61.6	+ 2.7	56.8	- 4.0	64.2	- 2.6
Fellsmere	63.7		60.8		64.9	
Fort Meade	62.6	+ 2.8	60.9 ²	- 0.3	66.3 ¹	- 0.8
Fort Pierce	66.2	+ 2.6	62.6	- 1.3	67.8	- 0.6
Inverness	60.2	+ 3.5	55.8	- 1.8	63.0	- 2.5

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal.

STATIONS.	January.		February.		March.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Isleworth ††	.....	.....	.....	.....	.....	.....
Kissimmee	.....	.....	.....	.....	.....	.....
Lakeland	65.2	.....	58.8	.....	65.0	.....
Lynne (near)	.....	.....	.....	.....	.....	.....
Malabar	63.8	+ 2.0	61.0	- 2.2	65.3 ^a	- 1.9
McDonald ††	61.0	+ 2.5	56.6	- 3.7	63.6	- 3.0
Merritts Island ††	62.8	+ 0.8	59.8	- 4.0	65.0	- 2.2
New Smyrna	59.2	+ 0.9	55.6	- 3.4	61.5	- 3.0
Ocala	59.2	+ 1.9	55.4	- 3.9	61.6	- 3.2
Okeechobee	.....	.....	.....	.....	.....	.....
Orange City	60.0	+ 1.3	56.5	- 3.5	63.6	- 2.3
Orlando	63.3	+ 3.5	58.6	- 2.7	65.0	- 2.3
Oxford	.....	.....	.....	.....	.....	.....
Pinellas Park	63.4	.....	58.4	.....	65.4 ^a	.....
Plant City	.....	.....	.....	.....	.....	.....
St. Cloud	62.8	.....	59.6	.....	66.5	.....
St. Leo	61.6	+ 1.7	57.2	- 3.7	63.2	- 4.0
St. Petersburg	64.9	.....	60.0	.....	64.8	.....
Sanford	61.6	+ 2.9	56.4	- 5.6	63.7	- 0.6
Tampa	63.7	+ 3.6	58.6	- 3.7	64.0	- 2.3
Tarpon Springs	63.6	+ 4.6	58.2	- 2.9	64.0	- 1.6
Titusville	61.3	+ 1.1	57.4	- 4.3	63.4	- 1.8
Southern Division.						
Arcadia	63.6	+ 1.1	57.8 ^a	- 5.8	66.8	- 1.5
Avon Park	63.7	+ 1.7	62.0	- 1.1	66.6	- 1.4
Bradentown	62.3	+ 1.7	58.8	- 3.4	63.7	- 2.5
Davie	66.6	.....	62.4	.....	66.8	.....
Fort Lauderdale	69.2	.....	64.4	.....	69.0	.....
Fort Myers	65.7	+ 2.4	62.2	- 2.7	67.5	- 1.2
Griffin ††	65.5	.....	62.6	.....	66.5	.....
Homestead	66.8	.....	64.2	.....	68.0	.....
Hypoluxo	68.0	+ 2.0	64.4	- 2.3	67.8	- 2.5
Jupiter	.....	.....	.....	.....	.....	.....
Key West	71.0	+ 2.2	68.2	- 2.6	70.8	- 2.0
Lock No. 1 ††	.....	.....	.....	.....	.....	.....
Long Key	71.4	.....	68.4	.....	71.4	.....
Miami (1)	68.6	+ 1.3	64.2	- 4.6	67.6	- 4.4
Miami (2)	69.6	.....	65.7	.....	70.2	.....
Moore Haven	63.8	.....	60.1	.....	65.7	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

STATIONS.	January.		February.		March.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Punta Gorda	63.6 ¹	.....	59.9	.....	66.2	.....
Ritta	65.9 ³	.....	.....	.....	67.4 ²	.....
Sand Key	70.7	.....	67.4	.....	69.2	.....
Western Division						
Apalachicola	56.2	+ 1.1	53.2	— 2.4	56.8	— 5.7
Blountstown .....	.....	.....	.....	.....	.....	.....
Bonifay	54.6	+ 1.9	51.2	— 2.7	57.6	— 6.4
DeFuniak Springs	54.0	+ 2.3	49.6	— 3.1	55.2	— 6.2
Garniers (near) ††	53.6	.....	53.2	.....	56.4 ³	.....
Marianna .....	.....	.....	51.6	— 0.5	58.8	— 2.3
Pensacola	55.0	+ 2.7	52.5	— 3.0	56.8	— 4.3
St. Andrews	57.0	+ 4.8	54.0	+ 0.1	58.6	— 2.5
Wausau	55.4 ¹	+ 3.9	51.1	— 2.0	61.4	— 1.1

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	April.		May.		June.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer	69.6	+ 1.0	74.2 ^a	— 1.4	.....	.....
Carrabelle	66.0	— 1.1	72.8	— 2.4	78.4	— 1.9
Cedar Keys	68.2	— 1.5	75.0	— 0.9	80.2	— 0.4
Crescent City	69.3	+ 0.1	72.0	— 4.4	77.2	— 3.2
Federal Point	70.2	+ 1.9	74.0	— 0.7	78.9	— 0.3
Fenholloway .....	.....	.....	.....	.....	.....	.....
Fernandina	67.2	— 0.3	72.8	— 1.2	78.6	— 0.7
Gainesville	70.2	+ 1.0	73.7	— 2.7	78.5	— 2.2
Glen St. Mary	66.5 ¹	— 0.7	72.2 ¹	— 2.7	77.4 ⁴	— 2.0
Hilliard	68.7	+ 1.0	72.3	— 1.8	78.4	— 0.6
Jacksonville	68.8	+ 1.2	71.9	— 2.3	78.6	— 0.4
Jacksonville (2)	67.9	.....	72.3	.....	78.3	.....
Jasper	68.6	+ 1.6	73.8	— 1.1	79.6	+ 0.5
Johnstown .....	.....	.....	73.0	— 1.8	78.5 ¹	— 1.5
Lake City	68.3	— 0.5	73.0	— 2.6	79.2	— 0.7
Live Oak	69.4 ¹	+ 0.6	74.8	— 0.6	80.1	+ 0.2
Madison	68.1	— 0.3	74.6	— 1.2	80.2	— 0.2
Melrose .....	.....	.....	.....	.....	.....	.....
Middleburg	68.0 ⁴	+ 0.8	72.6 ⁵	— 1.2	78.5 ⁴	— 0.8
Monticello	67.6	+ 0.1	73.8	— 1.5	78.8	— 1.3
Mount Pleasant	67.7	+ 0.5	73.3	— 1.6	78.6	— 0.3
Old Town	67.8 ²	.....	73.0 ⁴	.....	78.0	.....
Quincy	67.1	.....	73.4	.....	78.4	.....
St. Augustine	69.0	+ 0.7	72.1	— 1.9	78.3	— 0.7
Satsuma Heights	71.1	+ 1.9	72.6	— 2.9	.....	.....
Switzerland	70.2	+ 2.3	73.7 ⁴	— 1.0	79.2 ⁵	+ 0.4
Tallahassee	67.0	— 0.1	73.6	— 1.0	79.4	+ 0.3
Central Division.						
Bartow	73.0	+ 1.7	75.8	— 1.1	79.4	— 1.0
Brooksville	69.6	— 0.5	73.2	— 3.5	77.1	— 3.0
Clermont	73.2	+ 0.8	75.6	— 2.8	79.6	— 1.9
DeLand	72.2	+ 3.7	74.3	— 1.0	79.6	+ 0.6
Eustis	72.5	+ 1.5	75.4	— 2.0	80.5	— 0.4
Fellsmere	72.6	.....	73.4	.....	78.0	.....
Fort Meade	72.2 ³	+ 2.0	75.7 ¹	— 0.9	78.8	— 0.7
Fort Pierce	74.9	+ 3.4	76.2	+ 0.4	80.2	+ 1.1
Inverness	72.1	+ 2.5	74.6	— 1.5	78.6	— 1.4

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	April.		May.		June.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Isleworth ††	.....	.....	.....	.....	.....	.....
Kissimmee	.....	.....	.....	.....	.....	.....
Lakeland	72.6	.....	75.4	.....	78.3	.....
Lynne (near)	.....	.....	.....	.....	.....	.....
Malabar	73.8	+ 2.4	76.2	— 0.2	80.1	+ 0.4
McDonald ††	71.4	+ 1.0	73.5	— 3.1	77.7	— 2.9
Merritts Island ††	72.6	+ 1.0	74.2	— 2.1	79.0	— 0.5
New Smyrna	70.6	+ 2.1	72.5	— 1.4	77.6	— 0.8
Ocala	70.2	+ 0.5	73.9	— 2.2	78.0	— 1.9
Okeechobee	.....	.....	74.0 ^r	.....	78.1	.....
Orange City	70.6	+ 0.6	74.0	— 2.7	78.1	— 2.4
Orlando	72.6	+ 1.6	75.2	— 1.7	79.5	— 0.9
Oxford	.....	.....	.....	.....	.....	.....
Pinellas Park	71.6	.....	74.7	.....	79.0	.....
Plant City	.....	.....	.....	.....	.....	.....
St. Cloud	73.2	.....	75.2	.....	79.8	.....
St. Leo	71.1	+ 0.3	73.8	— 3.4	77.1	— 3.3
St. Petersburg	72.8	.....	76.2	.....	80.3	.....
Sanford	71.1	+ 1.9	74.0 ^s	— 1.2	78.2	— 0.9
Tampa	71.9	+ 0.9	76.0	— 0.4	79.6	— 0.4
Tarpon Springs	72.2	+ 1.9	75.1	— 0.5	79.3	— 0.4
Titusville	71.8	+ 2.1	73.6	— 1.7	78.4	— 0.6
Southern Division.						
Arcadia	73.2	+ 0.8	76.4	— 1.0	79.8	— 1.1
Avon Park	72.7	+ 0.6	75.3	— 2.0	78.6	— 1.3
Bradentown	70.9	+ 0.4	74.4	— 1.7	78.4	— 1.4
Davie	73.3	.....	73.6	.....	75.6 ^r	.....
Fort Lauderdale	75.4	.....	76.6	.....	79.4	.....
Fort Myers	74.5	+ 2.1	77.0	— 0.1	79.5	— 0.5
Griffin ††	73.4	.....	74.4	.....	76.9	.....
Homestead	75.8	.....	76.0	.....	77.5	.....
Hypoluxo	73.6	+ 0.6	75.5	— 1.7	78.7	— 0.7
Jupiter	.....	.....	.....	.....	.....	.....
Key West	77.2	+ 1.7	79.0	0.0	81.4	— 0.8
Lock No. 1 ††	.....	.....	.....	.....	.....	.....
Long Key	78.7	.....	79.9	.....	82.8	.....
Miami (1)	75.0	+ 0.8	76.2	— 2.4	79.2	— 1.2
Miami (2)	77.0	.....	77.1	.....	79.8	.....
Moore Haven	73.1	.....	74.6	.....	77.4	.....

CLIMATOLOGICAL DATA—Continued.
 Monthly and Annual Mean Temperatures for the Year 1920, with
 Departures from the Normal—Continued.

Stations.	April.		May.		June.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Punta Gorda	72.8 ¹	.....	75.3	.....	78.4 ^a	.....
Ritta	75.2 ¹	.....	75.4 ^a	.....	78.8 ¹⁰	.....
Sand Key	75.3	.....	77.5	.....	80.0	.....
Western Division.						
Apalachicola	66.6	— 1.2	73.2	— 1.8	78.6	— 1.8
Blountstown .....	.....	.....	74.4 ^s	.....	79.4 ^r	.....
Bonifay	68.2 ²	+ 1.3	74.0	— 0.2	79.9 ³	+ 0.5
DeFuniak Springs	66.0	+ 0.1	72.0	— 2.2	76.3	— 3.4
Garniers (near) ††	66.6	.....	73.3 ¹	.....	78.9	.....
Marianna	67.4	+ 1.3	72.8	— 1.7	79.2	— 0.5
Pensacola	65.8	— 1.9	72.9	— 1.9	78.4	— 1.6
St. Andrews	69.6 ^r	+ 2.6	73.7	— 1.4	79.6	— 1.3
Wausau	66.6	+ 0.3	73.7	— 1.8	76.4	— 4.1

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	July.		August.		September.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer						
Carrabelle	80.5	— 1.4	80.6	— 0.8	79.8	+ 1.3
Cedar Keys	82.0	— 0.3	81.6	— 0.2	81.2	+ 1.7
Crescent City	79.1	— 3.0	79.2	— 2.7	78.2	— 1.2
Federal Point	81.8	+ 0.6	82.0	+ 0.8	80.4	+ 1.9
Fenholloway						
Fernandina	80.2	— 1.1	79.7	— 1.3	79.6	+ 1.4
Gainesville	80.5	— 1.2	80.4	— 1.3	79.2	+ 0.5
Glen St. Mary	80.3 ¹	— 1.4	80.4	— 1.2	78.5	— 0.1
Hilliard	80.6	0.0	81.2	+ 0.2	78.7	+ 1.3
Jacksonville	80.2	— 0.7	80.5	+ 0.4	78.8	+ 1.5
Jacksonville (2)						
Jasper	80.6	— 0.7	80.8	— 0.1	79.8	+ 1.4
Johnstown	81.2 ³	— 0.4	82.0	+ 0.6		
Lake City	80.4	— 0.5	80.7	— 0.2	78.6	+ 0.2
Live Oak	81.0 ²	— 1.2	80.3	— 1.3	78.8	+ 0.3
Madison	81.4	0.0	81.4	— 0.1	80.1	+ 1.2
Melrose			81.6		80.2	
Middleburg	80.4 ⁴	— 1.2	80.6 ⁵	— 0.5	79.0 ⁶	+ 0.6
Monticello	80.0	— 0.7	79.7	— 0.8	79.8	+ 1.4
Mount Pleasant	79.9	— 0.3	79.0	— 1.2	78.4	+ 0.9
Old Town	79.6		80.4			
Quincy	79.7		79.2		78.9	
St. Augustine	80.4	— 0.5	80.7	0.0	79.7	+ 1.1
Satsuma Heights						
Switzerland	81.8	+ 1.4	82.2	+ 1.7	81.2	+ 3.4
Tallahassee	79.9	— 0.5	79.0	— 0.8	77.8	+ 1.2
Bartow	81.2	— 0.3	81.6	+ 0.2	80.6	+ 0.9
Brooksville	79.6	— 1.2	79.5	— 1.4	78.4	— 1.2
Clermont	82.0	— 0.9	82.7	— 0.1	81.6	+ 0.9
DeLand	82.3	+ 1.7	82.3	+ 1.7	80.9	+ 2.2
Eustis	82.8	+ 0.4	82.6	+ 0.3	81.1	+ 1.3
Fellsmere	80.0		80.6		79.8	
Fort Meade	80.6	— 0.2				
Fort Pierce	82.4	+ 1.8	82.2 ¹	+ 1.2	80.9	+ 1.0
Inverness	81.1	+ 0.4	81.2	+ 0.3	79.8	+ 0.8
Isleworth ††						

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	July.		August.		September.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Kissimmee	82.6	+ 0.5	82.6	+ 0.4	80.7	+ 0.4
Lakeland	80.8	.....	80.6	.....	79.8	.....
Lynne (near) .....	.....	.....	.....	.....	.....	.....
Malabar	82.2	+ 0.6	82.2	+ 0.3	81.2	+ 0.8
McDonald ††	80.8	- 1.0	80.4	- 1.1	79.2	- 0.0
Merritts Island ††	80.8	- 0.5	81.0	- 0.5	79.4	- 0.7
New Smyrna	79.5	- 0.4	79.6	- 0.4	79.0	+ 0.3
Ocala	80.8	- 0.6	80.2	- 1.1	78.8	- 0.0
Okeechobee	80.4	.....	81.1	.....	80.4	.....
Orange City	81.3	- 0.9	80.4	- 1.4	79.4	- 0.2
Orlando	81.6	- 0.5	81.4	- 0.7	80.8	+ 1.3
Oxford .....	.....	.....	.....	.....	.....	.....
Pinellas Park	81.2	.....	81.6	.....	80.3	.....
Plant City .....	.....	.....	.....	.....	.....	.....
St. Cloud	81.8	.....	82.4	.....	81.4	.....
St. Leo	79.1	- 2.3	79.6	- 1.8	78.2	- 1.4
St. Petersburg	81.7	.....	82.3	.....	81.2	.....
Sanford	80.4	- 0.7	80.0	- 1.0	79.6	+ 0.9
Tampa	81.3	+ 0.1	81.4	0.0	80.3	+ 0.6
Tarpon Springs	81.4	+ 0.4	81.4	+ 0.2	80.4	+ 0.8
Titusville	80.6	- 0.4	81.2	0.0	80.0	+ 0.5
Southern Division.						
Arcadia	80.8 ^s	- 1.1	81.8 ^s	0.0	80.6	0.0
Avon Park	79.8	- 1.8	80.8	- 0.9	79.0	- 1.2
Bradentown	80.8	- 0.1	81.4	+ 0.2	80.2	+ 0.3
Davie	79.7 ^r	.....	79.0	.....	79.1	.....
Fort Lauderdale	82.0	.....	81.2	.....	80.8	.....
Fort Myers	81.0	+ 0.1	81.6	+ 0.5	80.7	+ 0.8
Griffin ††	79.4	.....	77.9	.....	77.8	.....
Homestead	80.4	.....	80.1	.....	79.6	.....
Hypoluxo	80.8	- 0.7	80.0	- 1.6	79.9	- 0.9
Jupiter .....	.....	.....	.....	.....	.....	.....
Key West	83.9	+ 0.2	82.6	- 1.2	82.2	- 0.3
Lock No. 1 †† .....	.....	.....	.....	.....	.....	.....
Long Key	84.6	.....	83.7	.....	83.4	.....
Miami (1)	81.2	- 0.7	80.0	- 2.0	80.4	- 1.1
Miami (2)	81.6	.....	81.4	.....	81.6	.....
Moore Haven	79.4	.....	80.1	.....	79.8	.....

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with Departures from the Normal—Continued.

Stations.	July.		August.		September.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Punta Gorda	81.6	.....	82.2 ¹	.....	80.8	.....
Ritta	80.4 ²	.....	79.4 ³	.....	78.8 ³	.....
Sand Key	82.0	.....	80.9	.....	81.6	.....
Western Division.						
Apalachicola	81.7	— 0.2	80.5	— 1.2	79.0	— 0.4
Blountstown .....	.....	.....	.....	.....	.....	.....
Bonifay	81.0 ¹	+ 0.1	79.0	— 2.8	.....	.....
DeFuniak Springs .....	.....	.....	77.2	— 3.6	77.1	— 0.6
Garniers (near) ‡.....	79.6	.....	78.4	.....	78.3	.....
Marianna	80.9	— 0.1	80.2	— 1.0	80.3	+ 2.3
Pensacola	79.6	— 1.8	73.2	— 1.8	78.6	+ 0.7
St. Andrews	81.6	— 0.7	80.8	— 1.0	80.2	+ 1.1
Wausau	79.2	— 2.7	79.6	— 2.1	79.0	+ 1.0

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	October.		November.		December.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Northern Division.						
Archer						
Carrabelle	68.6	— 2.2	57.7	— 4.0	50.8	— 3.4
Cedar Keys	72.9	+ 0.3	63.4	— 0.3	56.8	— 1.6
Crescent City	69.3	— 2.3	63.2	— 1.5	55.8	— 1.4
Federal Point	71.0	— 0.9	63.9	— 0.1	57.5	+ 0.1
Fenholloway			57.0 ¹		53.1	
Fernandina	68.7	— 2.7	61.2	— 1.0	53.6	— 2.4
Gainesville	69.6	— 1.8	62.0	— 1.0	56.5	+ 0.1
Glen St. Mary	67.2	— 3.5	59.4	— 2.5	53.3	— 1.0
Hilliard	68.4	— 3.1	60.3	— 0.2	54.0	— 0.6
Jacksonville	68.7	— 0.9	61.7	+ 0.4	55.5	+ 0.3
Jacksonville (2)			60.2		53.0	
Jasper	69.0	— 0.6	58.9	— 1.6	53.4	+ 0.1
Johnstown	68.4	— 2.4	59.3	— 2.2	52.6	— 2.1
Lake City	67.6	— 2.2	58.2	— 3.4	52.8	— 3.2
Live Oak	68.3 ³	— 2.1	59.6 ³	— 3.2	53.4 ¹	— 1.4
Madison	69.3	— 0.8	59.5	— 1.3	53.6	— 0.7
Melrose	70.6		63.4		56.2	
Middleburg	67.8	— 2.5	59.6 ³	— 1.3	53.3 ³	— 0.9
Monticello	68.0	— 1.6	58.0	— 2.0	52.2	— 0.8
Mount Pleasant	66.0	— 2.9	55.6	— 3.7	50.9	— 2.5
Old Town						
Quincy	66.6		56.2		51.8	
St. Augustine	71.9	— 0.5	64.2	0.0	56.8	— 0.8
Satsuma Heights						
Switzerland	70.6	+ 0.1	63.6	+ 1.2	58.0 ⁴	+ 2.2
Tallahassee	67.2	— 1.2	57.5	— 2.0	52.1	— 0.8
Central Division.						
Bartow	72.1	— 1.9	65.2	— 1.3	63.5	+ 2.1
Brooksville	68.7	— 4.6	62.6	— 3.0	56.2	— 3.4
Clermont	74.2	— 0.7	68.3	+ 0.8	61.1	0.0
DeLand	70.3	— 1.7	64.6	+ 0.2	57.4	— 1.3
Eustis	71.5	— 1.8	64.6	— 1.0	58.8	— 1.1
Fellsmere	72.6		68.0		62.7	
Fort Meade						
Fort Pierce	73.8	— 2.5	69.4	0.0	64.5	+ 0.1
Inverness	71.3	— 1.3	64.5	+ 1.4	57.2	+ 0.4

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	October.		November.		December.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Isleworth ††						
Kissimmee	73.6	— 1.3	70.0	+ 2.6		
Lakeland	72.4		66.4		61.9	
Lynne (near)						
Malabar	75.0	— 0.5	69.2	+ 0.5	63.8	+ 0.6
McDonald ††	70.2	— 2.7	64.4	— 1.2	58.4	— 0.8
Merritts Island ††	73.4	— 2.1	68.4	0.0	62.4	— 0.6
New Smyrna	71.2	— 1.9	65.9	+ 0.7	57.2	— 1.4
Ocala	68.8	— 3.2	62.4	— 1.4	57.1	— 0.5
Okeechobee						
Orange City	69.8	— 3.5	63.4	— 1.3	58.3 ^a	— 1.0
Orlando	72.0	— 1.7	66.7	+ 0.2	61.4	+ 0.8
Oxford						
Pinellas Park	72.8		66.2		59.4	
Plant City						
St. Cloud	72.8		67.4			
St. Leo	69.6	— 3.8	63.8	— 2.3	58.4	— 1.5
St. Petersburg	73.4		67.6		61.6	
Sanford	71.2	— 2.5	65.3	0.0	59.7	+ 0.1
Tampa	72.2	— 1.6	66.2	— 0.6	60.2	— 1.0
Tarpon Springs	72.7	— 0.6	66.0	+ 0.3	60.0	+ 0.1
Titusville	72.2	— 1.5	66.4	0.0	59.8	— 1.8
Southern Division.						
Arcadia	71.8	— 3.3	67.1	— 0.6	61.6 ^a	— 1.5
Avon Park	72.9	— 2.0	67.6	— 0.3	63.8	+ 1.0
Bradentown	73.1	— 1.0	67.6 ^a	+ 0.5	63.8 ^a	— 0.8
Davie	74.3		71.2		67.0	
Fort Lauderdale	77.2		73.6		69.4	
Fort Myers	74.0	— 1.3	69.9	+ 0.3	64.8	+ 0.5
Griffin ††	73.4		70.7		65.6	
Homestead	74.0		71.4		69.8	
Hypoluxo	76.2	— 1.3	72.6	+ 0.2	68.2	— 0.1
Jupiter	76.4	— 0.4	72.6	+ 1.0	68.0	+ 1.7
Key West	77.6	— 1.1	74.5	+ 0.2	70.6	+ 0.5
Lock No. 1. ††						
Long Key	77.2		74.3		70.6	
Miami (1)	75.2	— 2.6	72.2	+ 0.2	68.0	0.0
Miami (2)	76.2		73.2		68.9	
Moore Haven	73.0		67.6		62.6	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	October.		November.		December.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Punta Gorda .....	.....	.....	68.6	.....	61.3	.....
Ritta	74.3 ²	.....	68.8 ⁸	.....	65.4 ¹	.....
Sand Key	76.9	.....	74.0	.....	70.8	.....
Western Division.						
Apalachicola	68.8	— 2.3	57.4	— 4.7	52.5	— 2.8
Blountstown .....	.....	.....	.....	.....	51.6	.....
Bonifay	66.7	— 1.5	54.0 ¹	— 5.4	48.2	— 3.8
DeFuniak Springs	64.8	— 3.7	55.0	— 4.0	50.8	— 1.3
Garniers (near) ††	66.8 ¹	.....	55.2	.....	50.2	.....
Marianna	68.2	+ 0.2	55.5	— 2.9	51.4	— 1.8
Pensacola	69.0	— 0.4	56.2	— 3.4	51.7	— 2.2
St. Andrews	70.0	0.0	58.7	— 1.1	52.8	— 0.4
Wausau	66.0	— 2.4	54.7	— 3.9	48.6	— 3.8

Small figures indicate number of days missing from report; thus
(1) one day; (2) two days, etc.

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	Annual.	
	Temperature.	Departure.
Northern Division.		
Archer		
Carrabelle		
Cedar Keys	69.5	— 0.8
Crescent City	68.0	— 2.3
Federal Point	69.6	0.0
Fenholloway		
Fernandina	67.4	— 1.1
Gainesville	68.7	— 1.1
Glen St. Mary	66.9	— 1.8
Hilliard	67.5	— 1.0
Jacksonville	68.0	— 0.2
Jacksonville (2)		
Jasper	67.7	— 0.2
Johnstown		
Lake City	67.3	— 1.7
Live Oak		
Madison	68.1	— 0.0
Melrose		
Middleburg		
Monticello	67.1	— 0.9
Mount Pleasant		
Old Town		
Quincy	66.3	
St. Augustine	69.0	— 0.5
Satsuma Heights		
Switzerland		
Tallahassee	66.6	— 0.6
Central Division.		
Bartow	71.8	— 0.2
Brooksville	68.5	— 2.4
Clermont	72.4	— 0.4
DeLand	70.3	+ 0.2
Eustis	71.0	— 0.6
Fellsmere	71.4	
Fort Meade		
Fort Pierce	73.4	+ 0.6
Inverness	70.0	+ 0.1

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	Annual.	
	Temperature.	Departure.
Isleworth ††		
Kissimmee		
Lakeland	71.4	
Lynne (near)		
Malabar	72.8	+ 0.2
McDonald ††	69.8	— 1.3
Merritts Island ††	71.6	— 1.0
New Smyrna	69.1	— 0.7
Ocala	68.9	— 1.3
Okeechobee		
Orange City	69.9	— 1.4
Orlando	71.5	— 0.3
Oxford		
Pinellas Park	71.2	
Plant City		
St. Cloud		
St. Leo	69.4	— 2.1
St. Petersburg	72.2	
Sanford	70.1	— 0.6
Tampa	71.3	— 0.4
Tarpon Springs	71.2	+ 0.2
Titusville	70.5	— 0.7
Southern Division.		
Arcadia	71.8	— 1.2
Avon Park	71.9	— 0.7
Bradentown	71.0	— 0.6
Davie	72.4	
Fort Lauderdale	74.8	
Fort Myers	73.2	+ 0.1
Griffin ††	+72.0	
Homestead	73.6	
Hypoluxo	73.8	— 0.8
Jupiter		
Key West	76.6	— 0.3
Lock No. 1 ††		
Long Key	77.2	
Miami (1)	74.0	— 1.4
Miami (2)	75.2	
Moore Haven	71.4	

CLIMATOLOGICAL DATA—Continued.

Monthly and Annual Mean Temperatures for the Year 1920, with
Departures from the Normal—Continued.

Stations.	Annual.	
	Temperature.	Departure.
Punta Gorda		
Ritta		
Sand Key	75.5	
Western Division.		
Apalachicola	67.0	— 2.0
Blountstown		
Bonifay		
DeFuniak Springs		
Garniers (near) ††	65.9	
Marianna		
Pensacola	66.3	— 1.6
St. Andrews	68.0	0.0
Wausau	66.0	— 1.6

COMPARATIVE ANNUAL DATA FOR FLORIDA.

YEAR	Temperature				Precipitation	
	Mean	Departure from the normal	Highest	Lowest	Average	Departure from the normal
1892	70.4	- 0.2	101	22	47.99	- 4.42
1893	71.0	+ 0.4	104	19	53.01	+ 0.60
1894	71.2	+ 0.6	101	12	52.51	+ 0.10
1895	69.9	- 0.7	100	11	45.50	- 6.91
1896	71.0	+ 0.4	103	20	49.62	- 2.79
1897	71.2	+ 0.6	104	17	56.69	+ 4.28
1898	70.5	- 0.1	102	17	48.36	- 4.05
1899	71.0	+ 0.4	104	- 2	53.93	+ 1.52
1900	70.7	+ 0.1	104	13	61.19	+ 8.78
1901	68.8	- 1.8	107	12	58.47	+ 6.06
1902	70.8	+ 0.2	105	15	51.24	- 1.17
1903	69.8	- 0.8	103	17	55.79	+ 3.38
1904	69.9	- 0.7	102	20	48.15	- 4.26
1905	70.5	- 0.1	103	10	61.43	+ 9.02
1906	70.9	+ 0.3	101	14	53.76	+ 1.35
1907	71.5	+ 0.9	102	21	49.15	- 3.26
1908	71.2	+ 0.6	103	20	48.54	- 3.87
1909	71.1	+ 0.5	103	16	49.52	- 2.89
1910	69.2	- 1.4	102	19	50.88	- 1.53
1911	72.3	+ 1.7	104	15	47.40	- 5.01
1912	71.1	+ 0.6	104	21	64.88	+11.61
1913	71.2	+ 0.7	104	23	48.02	- 6.20
1914	70.3	- 0.1	107	19	49.08	- 4.02
1915	70.4	- 0.1	105	23	56.30	+ 1.23
1916	71.1	+ 0.3	102	21	47.10	- 6.26
1917	70.3	- 0.7	102	13	41.36	-12.72
1918	71.3	+ 0.5	106	11	50.09	- 2.10
1919	71.6	+ 0.9	101	14	57.35	+ 5.08
1920	70.1	- 0.8	102	19	57.79	+ 5.83

PRESSURE, WIND, HUMIDITY, AND SUNSHINE DATA.

STATIONS	Atmospheric Pressure (Reduced to Sea Level)			Wind				Relative Humidity, Mean an.			Percentage of Sunshine
	Mean	Highest	Lowest	Average Hourly Velocity	Maximum Velocity	Direction	Date	8 A. M.	Noon	8 P. M.	
Jacksonville	30.06	30.55	29.48	12.4	58	w.	July 4	84	64	76	67
Key West	30.02	30.38	29.64	10.3	50	sw.	Sept. 30	77	69	77	66
Miami	30.04	30.41	29.61	8.6	38	s.	Sept. 30	78	66	75	62
Pensacola	30.06	30.59	29.52	13.2	64	n.	May 5	81	70	74	61
Tampa	30.05	30.50	29.47	6.7	36	sw.	Aug. 4	82	58	72	66

KILLING FROSTS, 1920.

STATIONS	Last in spring	First in autumn
Northern Division.		
Archer	Mar. 8	*
Carrabelle	Mar. 8	Nov. 17
Cedar Keys	Mar. 1	None
Crescent City	Mar. 7	None
Federal Point	Mar. 8	None
Fenholloway	*	*
Fernandina	Mar. 8	None
Gainesville	Mar. 8	Nov. 18
Glen St. Mary	Mar. 9	Nov. 18
Hilliard	Mar. 10	Dec. 11
Jacksonville	Mar. 8	Nov. 18
Jacksonville (2)	Mar. 8	Nov. 18
Jasper	Mar. 9	Nov. 18
Johnstown	*	Nov. 15
Lake City	Mar. 8	Nov. 17
Live Oak	*	Nov. 18
Madison	Mar. 8	Nov. 18
Melrose	*	None
Middleburg	Mar. 9	Nov. 18
Monticello	April 6	Nov. 18
Mount Pleasant	*	Nov. 17
Old Town	Mar. 7†	*
Quincy	April 6	Nov. 17
St. Augustine	Mar. 2	None
Satsuma Heights	Mar. 7	Dec. 29
Switzerland	Mar. 7	None
Tallahassee	Mar. 8	Nov. 17
Central Division.		
Bartow	Mar. 7	Dec. 17
Brooksville	April 6	Oct. 29
Clermont	Mar. 1	None
DeLand	Mar. 7	None
Eustis	Mar. 8	None
Fellsmere	Mar. 2	Dec. 17
Fort Meade	Mar. 7	*
Fort Pierce	None	None
Inverness	Mar. 7	None
Isleworth	None	None
Kissimmee	*	None
Lakeland	Mar. 1	None
Lynne (near)	Mar. 7	Nov. 18
Malabar	None	None
McDonald	Mar. 7	None
Merritts Island	None	None
New Smyrna	Mar. 2	None
Ocala	Mar. 8	Nov. 18

KILLING FROSTS, 1920.—(Continued)

STATIONS	Last in spring	First in autumn
Okeechobee	*	*
Orange City	Mar. 7	Dec. 3
Orlando	Mar. 7	None
Oxford	*	*
Pinellas Park	Mar. 2	None
Plant City	*	*
St. Cloud	Mar. 2	None
St. eLo	Mar. 2	None
St. Petersburg	Mar. 7	None
Sanford	Mar. 7	None
Tampa	None	None
Tarpon Springs	Mar. 2	None
Titusville	Mar. 2	None
Southern Division.		
Arcadia	Mar. 7	None
Avon Park	None	None
Bradentown	Mar. 7	None
Davie	Mar. 7	Dec. 17
Fort Lauderdale	Mar. 2	None
Fort Myers	None	None
Griffin	Mar. 7	Dec. 17
Homestead	Mar. 2	Dec. 17
Hypoluxo	Mar. 7	Dec. 17
Jupiter	*	None
Key West	None	None
Lock No. 1	Mar. 7	Dec. 17
Long Key	None	None
Miami (1)	Mar. 2	None
Miami (2)	Mar. 2	None
Moore Haven	Mar. 8	Dec. 17
Punta Gorda	Mar. 2	None
Ritta	Mar. 7	None
Sand Key	None	None
Western Division.		
Apalachicola	Mar. 8	Nov. 17
Blountstown	*	*
Bonifay	April 6	Nov. 17
DeFuniak Springs	April 6	Oct. 30
Garniers (near)	Mar. 9	Nov. 13
Marianna	Mar. 8	Nov. 17
Pensacola	Mar. 7	Nov. 17
St. Andrews	Mar. 6	Nov. 18
Wausau	Mar. 14	Nov. 4

* Record incomplete. † Data incomplete, but this date probably correct.

MONTHLY SUMMARY, 1920.

MONTH	Temperature				Precipitation		Average Number of Days				Wind
	State Average	Departure from Normal	Highest	Lowest	State Average	Departure from Normal	Rainy, 0.01 Inch or More	Clear	Partly Cloudy	Cloudy	Prevailing Direction
January	61.1	+ 2.2	87	21	2.60	-0.30	8	16	8	7	ne.
February	57.1	- 2.9	87	19	5.41	+2.42	8	13	8	8	nw.
March	63.0	- 2.9	97	21	1.24	-1.83	4	17	10	4	se.
April	70.9	+ 0.9	95	30	6.28	+4.04	8	13	10	7	se.
May	74.4	- 1.6	97	47	4.98	+1.09	9	15	10	6	ne.
June	78.8	- 1.0	102	55	6.02	-0.35	11	15	9	6	se.
July	80.9	- 0.5	99	59	7.23	+0.22	15	10	15	6	sw.
August	80.7	- 0.6	101	60	6.62	-0.50	15	13	13	5	se.
September	79.8	+ 0.6	101	48	8.09	+1.32	14	11	12	7	e.
October	71.2	- 1.8	92	32	1.91	-2.74	5	19	8	4	ne.
November	64.3	- 1.1	89	25	4.06	+1.83	7	15	6	9	ne.
December	58.6	- 0.8	90	21	3.35	+0.63	7	16	7	8	nw.
Year	70.1	- 0.8	102	19	57.79	+5.83	111	173	116	77	ne.

MAXIMUM RAINFALL AT REGULAR STATIONS.

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
5 Minutes ....	.16 ³	.33 ²	.15 ⁴	.43 [*]	.41 ⁴	.44 ³	.54 ³	.53 ⁴	.57 ⁴	.53 ²	.52 ⁴	.30 ⁴	.57
10 Minutes ....	.19 ³	.46 ³	.20 ⁴	.78 ⁴	.67 ³	.67 ³	.87 ⁴	.97 ³	.99 ⁴	.80 ³	.78 ³	.52 ⁴	.99
15 Minutes ....	.22 ⁴	.54 ³	.22 ⁴	1.06 ⁴	.84 ⁴	.74 ⁴	1.06 ³	1.34 ¹	1.36 ⁴	.92 ³	.61 ³	.61 ⁴	1.36
30 Minutes ....	.33 ⁴	.76 ³	.28 ⁴	1.73 ⁴	1.10 ³	1.11 ⁴	1.86 ³	2.13 ¹	1.72 ⁴	.96 ⁴	1.19 ³	.96 ⁴	2.13
1 Hour .....	.50 ⁴	1.27 ³	.33 ⁴	2.56 ³	1.51 ³	1.54 ⁴	2.61 ³	2.65 ¹	2.12 ³	.99 ³	1.52 ³	1.46 ⁴	2.65
2 Hours .....	.77 ⁴	1.47 ³	.39 ⁴	2.76 ³	1.99 ¹	2.69 ¹	2.84 ³	2.72 ¹	2.56 ⁴	.99 ³	1.78 ³	1.65 ⁴	2.84

¹ Jacksonville; ² Key West; ³ Miami; ⁴ Pensacola; ⁵ Tampa.

* Key West and Tampa.

INDEX

Introduction	3
Fiscal Report of Department.....	4
Summary of Agricultural Production by Years.....	16
Agricultural Statistics	19
Taxed-values of Land.....	102
Manufacturing Statistics	104
State Population Statistics.....	296
Civil Districts of State.....	308
Phosphate Production	309
Miscellaneous	316
Federal Farm Loan Banks.....	367
Federal Aid to Good Roads.....	368
Climatological Report	373